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ABSTRACT

In the first section of this report, a description is given of the total system, including the following elements: Assumptions, curriculum, instructional procedures, instructional program-communications, evaluation procedures, personnel management, financial management, and parental and community involvement. Following this system description is an account of program operation for the development and installation of the individualized system. Sections are included that detail the actions necessary by county and district officers, development teams, principals, teachers, and parents to put the program into effect in a typical school, specified according to the phases of preparation, development and staff training, initial installation, and future installation. (Author/MLF)

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December, 1971

College of Education
Florida State University
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REPORT NO. 4

Plan of Operation for an Individualized System of Elementary Education

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Florida State University

December, 1971

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Contract: Developing an Optimal Model for Individualized Instruction in Elementary Education. SDE Contract No. 710-081

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Plan of Operation for an Individualized
System of Elementary Education

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Plan of Operation for an Individualized
System of Elementary Education

I. Introduction

A plan of development and operation of an optimized system of individualized elementary education is described in this report. Design of the system has been revised in accordance with continued planning and analysis, as well as on continuing receipt of new information, since the preparation of previous reports on this project. These reports are:

1. Report No. 1. Components of an Optimized System of Elementary Education, June 30, 1971.

2. Report No. 2. Survey of Procedures, Techniques, and Materials Available for a System of Individualized Instruction for an Elementary School, August 31, 1971.

3. Report No. 3. A Design for Administration and Management of a System of Individualized Instruction in an Elementary School, August 31, 1971.

When descriptions of components of the system being designed are contained in one or another of these reports, they are referenced in the present report by page number. In the interval, new materials have been received, new procedures discovered or designed, new management techniques devised. These are described in the present report either in the context of the total system, or as referenced in appendices.

Organization of the Report

In order to make the present report as highly informative, explicit, and usable a document as possible, the following plan is followed.

First, in Section II, a description is given of the total system, including the following elements:

A. Assumptions

B. Curriculum

C. Instructional Procedures

D. Instructional Program--Communications

E. Evaluation Procedures

F. Personnel Management

G. Financial Management

H. Parental and Community Involvement

Following this system description is an account of program operation for the development and installation of the individualized system of elementary education. Sections are included which detail the actions necessary to put the program into effect in a typical school, in the following terms:

III. Actions Required of County and District Officers

IV. Actions Required of the Development Team

V. Actions Required of the Principal

VI. Actions Required of Teachers

VII. Actions Required of Parents

Each of these sections is divided into numbered subsections and lettered paragraphs, with appropriate headings. This form is employed to facilitate the deriving of checklists of actions, and also to make possible cross-referencing. While it is apparent that the adoption of this general format results in some instances of redundancy, it is nevertheless expected to enhance the usefulness of the report.

The various actions required of these individuals and groups naturally suggest a time phasing, when considered in relation to the school year and the total program effort. Accordingly, these actions are themselves specified according to four periods, as follows:

A. Preparation phase (1 November 1971 to 1 July 1972). This phase is particularly concerned with the training of the teaching staff and the assembly of a development team.

B. Development and staff training phase (1 July 1972 to 15 August 1973). This phase is one of highly concentrated activity. In the development effort, many kinds of implementing instructions, procedures, records, and forms need to be fabricated in order to permit the system to be fully installed. Staff training consists of two summer workshops, one in 1972 and one in 1973. Teacher training is continued during the 1972-73 school year, as the staff gains experience in individualized procedures for programs in mathematics and reading.

C. Initial installation phase (15 August 1973 to 15 June 1974). The plan calls for the installation of a total system, applicable to all subjects of the curriculum, beginning with the school year of 1973-74. Such installation will have been preceded by specific staff training on the new elements of the system during the preceding summer. Tryout and refinement of these procedures takes place during this year.

D. Future installation phase (July 1974 to July 1975 or 1976). Since some components and procedures of the system cannot be developed in final form except on the basis of experience, provision is made for additional "fine tuning" over a period of one or two years. Program evaluation should also take place in this period.

Use of the Report

With the organization described, it should be possible for the report to be used for various purposes, and by various individuals, agencies, or groups. Generally, it is recommended that reading of Section II, Description of the System, be undertaken before the details of development and operation are examined. Examples of possible uses of the report are as follows:

A County Superintendent or his staff can gain an impression of the nature and scope of effort required to institute an optimized system of elementary education.

A school or District staff can identify the kind of development effort which may need to be funded for the purpose of transforming a school and providing it with the materials needed to install such a system.

A school principal can perceive what he must do, in the various phases indicated, to prepare and train his teaching staff, and to insure parental involvement, in installing and maintaining the new system.

Teachers will gain an impression of what their duties and responsibilities will be when the system of individualized instruction is installed, and identify the many new procedures they will need to learn.

Parents can learn what an individualized system is like, how it is expected to affect their children's activities in school and in the home, and how they can help to achieve the system's goal of improved learning.

Members of the project team are generally convinced that individualized instruction represents an essential characteristic of improved elementary education. We suspect that individualizing has not often been fully implemented in practice, even in the many schools that use the phrase

in a nominal sense to describe their programs. Accordingly, we have made an attempt to provide an account of an individualized system in which critical features are optimized, with the goal in mind of enriching pupil learning and raising pupil competence.

It is surely our hope that the design which this report describes will be seen as a system which is eminently feasible. Although the effort required to develop and install such a system is complex and substantial, its projected enhancement of learning is of considerable amount, and worthy of adoption as a goal. We should like to see the system tried, and by many schools.

II. Description of the System

A. Assumptions

1. The system to be developed involves the following major features:

   a. Individualized instruction, which incorporates the twin ideas of mastery of basic skills without time constraints, and pupil choice of a variety of generalizing activities;

   b. Student tutoring within a relatively narrow age-span as an integral part of instruction, along with other forms of student participation and cooperation in learning activities;

   c. Parental involvement in the determination of goals of the system, and in the support of student learning.

   d. Operational costs which include options not exceeding those of a typical elementary school employing traditional instruction.

2. A partially ungraded school is divided into several "Little Schools," each composed of Kindergarten; Grades 1 through 3; and Grades 4 through 6. Kindergarten classrooms contain a single age group. Otherwise, each classroom is a home base for a group of students who have a range of ages corresponding to three different grades (1, 2, 3, or 4, 5, 6). The ungraded feature is designed to make possible flexible assignment of students to learning tasks, allowing for the extensive individual differences known to exist. Kindergarten is treated in a separate manner because of its special job of introducing children to the school environment, fostering social development, and conducting extended observations to forecast future "placement" of pupils in learning tasks.

3. As described in Report No. 1, the curriculum has two main parts, called (a) foundational (or basic) and (b) generalizing. In the former, precise diagnosis and assignment leading to mastery are essential. In the latter, assignment is based upon mastery of related foundational skills, is subject to student choice, and does not require "mastery." To a maximum possible extent, generalizing activities (which include science, social studies, physical education, art, music) are employed as reinforcers, made to be contingent upon prior mastery of foundational skills.

4. Assessment of students employs criterion-referenced measures to a maximum possible extent, including the measurement of skills, information, cognitive strategies, and attitudes. Assessment is conceived as an integral, rather than a separate, part of the instructional process, and emphasizes the use of "unobtrusive observations."

5. The main focus of the teacher's job is promoting the learning of pupils. A personnel management system is to be provided which furnishes rewards to teachers in the form of yearly increments based upon their performance in bringing about advances in pupil learning, as a major determining factor. That is to say, this factor is to be weighted at least three times as much as any other.

6. A method for reporting student progress to parents will provide information concerning "where the student is" in relation to what he has learned and what he has yet to learn, but not in relation to his classmates. The form of reporting will be made readily understandable by parents, and acceptable to them.

7. To the maximum possible extent, instructional materials will be selected as obtainable from readily available sources. Development activities will be primarily devoted to the formulation of procedures, along with locally produced lesson sheets, record forms, assignment folders, and other instructional aids.

8. Teacher preparation for the system will include the two major components of (a) using contingency management techniques to reinforce student learning, and (b) employing specific procedures in accomplishing diagnosis and assignment, with provision for mastery of basic skill subjects.

B. Curriculum

1. Kindergarten. The curriculum selected for the kindergarten has the aim of developing (a) the language and mathematics skills which are necessary for communications in all subsequent grades, and (b) the social and personal skills which are important for individual development. The SWRL Instructional Concepts Program (Report No. 2, p. 16) and the Open Court Kindergarten Program (Appendix A, this report) are the main components of the curriculum. The Open Court Program includes lessons in letters and sounds, basic vocabulary, classification, counting and measuring, thinking skills, perceptual games, social development, and human understanding through literature. The Instructional Concepts Program emphasizes the acquisition of useful vocabulary for oral language. For those children who have already mastered the language and mathematics skills represented in these programs, the SWRL First Year Communication Skills Program and IMS Math Level I are available as instructional materials.

2. Foundations curriculum (basic skills). The basic skills area of the curriculum, to which the concept of mastery applies, consists of reading, mathematics, and language skills.

   a. Reading, 1-6. The program selected for this area of instruction

is Criterion Reading (see Report No. 2, p. 19), designed for individualized instruction. The teacher is encouraged to use available materials in this subject, and so is permitted a great deal of flexibility in choice. The program itself consists of carefully designed placement and diagnostic exercises, which perform both an instructional and a testing function. It covers skills ranging from the simplest letter and sound discriminations to skills of complex comprehension. The program has been given extensive tryouts in a number of schools, and has demonstrated its feasibility of usage in individualized instruction.

b. Mathematics, 1-6. The program selected for this curriculum is IMS Mathematics, developed by the Regional Laboratory for the Carolinas and Virginia (Report No. 2, p. 6). These materials are currently being given field tryouts in various schools, including some in Dade County, Florida. This program is composed of reusable exercises, thus making its costs relatively low over a multi-year period. Placement and diagnostic tests are included, and carefully prepared directions are provided for individualized use.

c. Language skills. Curricula in areas of language skills other than reading will need to be examined, selected, and adapted during a development period. For spelling skills, selection can be made from the SRA Words and Patterns series (Report No. 2, p. 25) or the Houghton Mifflin Power to Spell series (Report No. 2, p. 26). Both of these programs present spelling as a rule-application task. For handwriting skills, programs need to be identified which provide for individual instruction and practice in both manuscript and cursive forms. Other areas to be determined include oral language skills, written composition skills, listening and viewing skills. The SRA Organizing and Reporting Skills Kit covers valuable skills in expository writing, and is organized for individualized instruction. Some possible programs in language skills are described in Appendix A.

3. Generalizing curriculum. Materials organized for student selection of interesting and challenging activities will be available following a development period in the following areas:

a. Social Studies, 1-6. Several programs are possible as candidates for generalizing activities. To be sought are the characteristics of (a) high interest, (b) variety, and (c) choice of student activities. In the earlier grades, programs coming closest to meeting these criteria are Man in Action (Report No. 2, p. 35) and Our Working World (Report No. 2, p. 40). Both of these programs might be employed, to provide a suitable variety of learning materials. In addition, the possibility should be explored of designing community projects or field trips which emphasize some of the intellectual processes described in the Hilda Taba Social Studies Curriculum

(Report No. 2, p. 36). For children of the age of Grades 4-6, suitable instructional materials are provided by Man--A Course of Study (See Appendix B). Other choices of activities may be found in the SRA Social Science Laboratory Units (Appendix B). Filling a special purpose is the SRA Map and Globe Skills Kit (Appendix B).

It should be noted that none of these materials is currently "ready for use" in the context of a generalizing curriculum for the individualized instructional system. During a development period, specific developmental efforts must be devoted to designing and fabricating such ancillary materials as assignment sheets, directions to students, checklists or other assessment and self-assessment devices, instructions for team and group work, and others.

b. Science, 1-6. For the children of early grades, available materials suitable for generalizing activities are severely limited in number. Concepts in Science (Appendix B) provides packaged equipment for laboratory work and individual investigation cards for grades 1-6, and tests for the Grade 3-6 range. Thinking Ahead in Science (Appendix B) is also applicable to early grades, although it is not so well adapted to the individual or team activity conceived as appropriate for an individualized system. For grades 4-6, the Inquiry Development Program (Report No. 2, p. 46) provides a set of exercises which can be carried out independently or in pairs by students. Other programs from which selections can be made are those programs previously mentioned for earlier grades, and SRA Learnings in Science (Appendix B). The latter program makes available exercises and experiments for individual and group work in various areas of the physical and earth sciences.

As is true for the field of social studies, a number of necessary materials will need to be developed in order to make any of these materials useful for generalizing activities in the Science area. Examples of these materials are listed in a previous paragraph pertaining to Social Studies.

c. Music. All students should participate regularly in group music activities through which they are introduced to a wide range of musical experiences. Opportunities to explore in greater detail different types of musical expression, a variety of musical instruments, and written forms of music should be provided as generalizing activities on an individual or small group basis.

d. Art. Activities in art, and in craft activities such as carpentry or weaving, should be part of the generalizing curriculum. The construction of products in these fields tends to insure their attractiveness to students as reinforcing activities. One set of materials which could be incorporated in the art program is

entitled Teaching Art to the Young (Appendix B), which includes independent activities for students.

e. Mathematics. Generalizing activities in this area will need to be identified and referenced to skills in the IMS curriculum. A suggested list of materials for consideration is given in Appendix B. The SRA New Math Applications Kit is exemplary of highly motivating generalizing activities. The kit contains instructions for 270 experiments in the areas of science, social studies, every day situations, occupations, and sports. Problem cards describe the experiment and guide students individually or in small groups as they collect and sort data. The students then apply whatever mathematical methods they can to the problem.

f. Reading. Many of the generalizing activities in reading will consist of library books, science, health, and social studies texts and story texts which children may read silently. When multiple copies of reading texts are available a group of two to four children may take turns reading orally. For young children, cassette tapes which "read along" with the child have been found to be of high interest and value.

4. Other activities. Additional kinds of activities to be planned and scheduled include the following:

a. Physical Education. Physical education will normally be conducted for groups of children of approximately the same age. Thus for any given classroom group, only one-third of the children will be involved at one time. The curriculum in physical education should provide for the development of both group and individual skills. The emphasis on group activities and games should be for fun and for social development. Individual physical development may be directed toward improvement in the individual's own capabilities. Students can keep their own records to show progress in such skills as length of broadjump, height of rope climbed, and speed of running a given course. The details of this curriculum need to be specified during a development phase.

b. Lunch. Lunch time should be considered an integral part of the school program. Social interaction skills such as how to converse at the table may be reinforced during this period. Parents may be invited periodically to join the class for lunch. If the school operates a self-contained lunchroom, special meals may be served periodically to familiarize the students with international or regional specialties. If the lunchroom personnel are patient and willing, a small group of students might prepare a dish for their classmates. As a generalizing activity, cooking requires certain reading and measurement skills, as well as cooperation when carried out by a group working together.

C. Instructional Procedures

1. Kindergarten. The instructional procedures of the kindergarten will vary somewhat from traditional programs in order to foster the development of skills supportive of intellectual development. Emphasis is placed on the diagnosis and assignment of activities according to procedures prescribed in the curricula previously described. The puzzles, toys, blocks, and arts and crafts found in the typical kindergarten will be used as generalizing activities following individual accomplishments in language, pre-reading, and pre-mathematics areas.

2. Basic Skills. In reading, language, and mathematics skills, the procedure for individualized instruction requires that placement tests be given to each stud nt to determine where his instruction should begin. In addition, students need to be fully instructed in the classroom procedures related to locating and using materials for individual study. Throughout the day the student alternates between working on assignments in basic skills and participating in generalizing activities, which are contingent upon specified accomplishments in the basic skills. Once the teacher and student have agreed upon the assignments and the generalizing activities to follow, the student obtains the necessary materials for an assignment and returns to his work space. The teacher may (or may not) have assigned a tutor to assist the student. When the student has completed the designated assignment, either by completing certain work or by mastering a given skill, he proceeds to the previously agreed-upon generalizing activity.

   When making assignments in basic skills, the teacher must consider (1) the student's record of previously mastered skills, (2) his progress toward mastery of skills currently under study, (3) the variety of instructional materials available to the student, (4) the advisability of assigning a tutor, (5) when the student should be assessed for mastery, and (6) the student's relative progress through all areas of basic skills. The teacher's decisions in making assignments should be explained to the student so that the student may later be able to select instructional materials for a specified skill from those available, and to determine for himself when he has mastered a skill.

3. Generalizing activities. The selection of generalizing activities should be made by the student, in order to have the desired motivating effect. However, this selection should be made from an array of activities appropriate for the individual based on his prior mastery of certain basic skills. The generalizing activities may be in the areas of social studies, science, math, reading, art, music, etc., or may be the opportunity to tutor another student. The time limit of the generalizing activities is agreed upon with the child.

4. Arranging contingencies. The selection of generalizing activities and the assignment of tasks in basic skills need to be made at the same time so that the contingencies can be established. At first the amount of assigned work completed before participating in a generalizing activity may be very small. Later the student may be able to complete many assignments before participating in a more lengthy generalizing activity. The teacher will monitor the activities of each individual throughout the day to insure that the proper sequence of contingencies is maintained. At first the teacher must make most of the decisions; however, the students should be guided in efforts to assume increasing responsibility for establishing their own contingencies.

5. Student participation in instruction. Beginning with the primary grades, every student should be trained in the role of a tutor for basic skill subjects, and should have experience in tutoring other pupils, varying in amount as dependent upon his interests and the opportunities which become available. A student becomes qualified as a tutor for a given basic skill when he has (a) demonstrated mastery of that skill, and (b) successfully completed a brief course of training as a tutor. Pupils should be trained in such skills as (1) introducing the learning task in an informal and friendly manner; (2) giving clear directions; (3) using positive and avoiding negative reinforcement; (4) using questions and avoiding over-prompting; (5) identifying successful performance on the part of the pupil receiving tutoring. Materials for tutor training are the Tutor's Manual and Tutorial Manager's Manual developed under contract with the Florida State Department of Education (Report No. 2, p. 74), and the SWRL Tutor Training Kit (Report No. 2, p. 73).

   A pupil becomes available as a tutor, once qualified, when he volunteers to undertake this activity during periods when he is not himself engaged in pursuing assignments of basic skills. Thus, tutoring becomes a pursuit which may be undertaken as one kind of generalizing activity; on occasion, the qualified tutor may interrupt other kinds of generalizing tasks (in science or social studies, for example) in order to begin a tutoring activity. From the potential tutors known to the teacher as qualified and available, she selects and makes an assignment of tutor and pupil, with consideration of such other suitability factors as personal style, age, and sex.

   a. Student participation in generalizing activities. A number of other roles besides that of tutor are to be made available to the student as a participant in instruction. These occur particularly in the generalizing sector of the curriculum, and include the role of leader in undertaking a science exercise, recorder on a social studies field trip, or educational game organizer. In addition, various roles

may be played within simulation exercises (e.g., mayor or councilman in a simulation of city government). These activities will need to be specified by development of directions for group activities, in the various areas of the generalizing curriculum.

6. Schedules and testing, 1-6. These procedures imply scheduling which is completely flexible and individualized. A student may be working on any task at any time during the day, depending upon his individual needs and progress. Only a portion of the group assigned to a particular classroom will be scheduled for group classes in physical education and music at any one time. Other large-group activities will involve the entire class in an occasional social studies or science lesson guided by the teacher.

   Since it is the teacher's responsibility to see that each child is productively involved in learning each day, the teacher will need to schedule daily reviews of each child's progress and his assignments. The teacher may conduct these reviews either during or after school hours. Each student's folder is examined and assignments revised as necessary. The teacher might also write notes to the student, such as, "see me for a tutor," "you're doing a good job on the math," or "skip these assignments and see the aide for assessment." The teacher also schedules a weekly planning session to be held with each child. At this time the teacher consults the student record cards which she maintains. Assignments are written on the appropriate assignment sheets and placed in the student's folder to guide his work throughout the week.

7. Space arrangements. The conduct of an individualized program requires the setting aside of certain "centers" of space devoted to generalizing activities in a number of different fields of the curriculum. Thus, in addition to a "home base" to which a child reports each morning, space must be set aside in classrooms, preferably separated from the remainder of classroom space by low screens, to establish a "science center," a "social studies center," and so on. Besides the centers in each classroom, other space possibilities should be thoroughly explored as alternatives or needed additions. For example, generalizing activities in reading and mathematics seem particularly appropriate functions for the school library. Other possible center locations are art and music rooms, general purpose rooms, assembly room stage, and outside areas.

D. Instructional Program--Communications

Communication is a process by means of which decisional premises are transmitted from one member of the organization to another. This is a two-way process, including both the transmittal of information to a decision center, and the transmittal of decisions reached from the center to other parts of the organization. A workable communications network is essential for optimal functioning of a program of individualized elementary education.

1. Organization. Since the present system assumes a total school organization composed of three "Little Schools," each composed of divisions for Kindergarten, Primary (1-3), and Intermediate (4-6), provision must be made for two types of communications networks. One of these is based in the cluster of home-room teachers within each Little School, while the other provides for communication, somewhat less frequently, among kindergarten teachers, among primary teachers, and among intermediate teachers.

   The system includes as a basic element distinct cluster areas encompassing grades K through 6, each with one kindergarten, three primary homerooms, and three intermediate homerooms. Each Little School includes approximately 210 children and seven teachers, one of whom is designated as the coordinator.

2. Weekly coordination meetings. At a weekly coordination meeting for each Little School the teachers will discuss and review program objectives and any special problems indicated in reports on individual students. Special problems may also pertain to tutor's schedules, assignments to generalizing activities, or the special needs of particular students. Art, music, and physical education teachers should attend these weekly conferences on a rotating basis.

   Consideration may be given in these conferences to the availability and assignment of tutors across homeroom groups of students. This will require communication and agreement between the two teachers involved.

3. Monthly meeting of teachers in grade-level groups. Teachers of common grade levels, kindergarten, primary, and intermediate, drawn from all Little Schools, should hold monthly meetings to discuss common problems and to exchange information about innovations and new procedures. Recommendations can be made to the total group, for transmission to the principal.

4. Coordinating council. A coordinating council consisting of Little School coordinators, the principal, a representative of the District office, and a parent representative for each Little School will be scheduled to meet at regular intervals, either monthly or every six weeks. This council will review the progress of the school's program and work out problems in terms of program objectives and procedures. The council will make recommendations to the principal. A report of these meetings will be submitted by the principal to the District superintendent.

E. Evaluation Procedures

Evaluation will be undertaken as an integral part of the total system. Particular procedures need to be developed and implemented for the

evaluation of (1) student performance in various areas of activity, and (2) teacher performance in the support of learning and in facilitating student achievement.

1. Student performance. The performance of students is evaluated throughout the conduct of an individualized instruction program to achieve a number of objectives: (1) initial placement of students in an approximate "level" with respect to first assignments in each basic skill subject; (2) assessment of mastery of each assignment in basic skills, and of the completion of instructional objectives on generalizing tasks; (3) diagnosing learning difficulties in order to identify needed assignments; and (4) measuring student progress in areas of the curriculum over a yearly period.

   a. Placement testing. At the beginning of each school year, pupils are given placement tests in various areas of basic skills, namely, mathematics, reading, writing, spelling. Testing is done on an individual basis when necessary (as, for example, in oral reading). On the basis of performance in these basic skill areas, a general plan is made for each student covering a six-week period, and initial assignments are made accordingly. In the case of subjects in the generalizing part of the curriculum (science, social studies, etc.), performance scores and records of activities performed in the previous year are used to complete the six-week plan, forecasting desirable activities in these subjects from which pupil choices can be made.

   b. Assessment of mastery. The assessment of student performance is of particular importance to an individualized system, particularly in the area of foundational skills where new assignments are made on the basis of mastery of pre-requisite skills. Such day-to-day assessment should not be considered a matter of formal "testing," but instead likened to the informal "probing" typically done by every teacher in the classroom. It differs from the latter not in its formality of administration, but in its provision of pre-established standards ("criteria") used by the teacher, or by the student, to judge when mastery has been achieved. Criteria for mastery are specified in programs designed for individualized instruction (e.g., IMS Math, Criterion Reading), along with procedures and items used for the observation of individual student performance. Instruments and procedures for assessing mastery in other basic skill areas will require a developmental effort.

      Records of student achievement in basic skills are kept by the teacher on Student Record Cards, and are also noted by the student in his individual folder. Summarizations of these achievement records are made by the teacher in a Class

Record, which in turn is the basis for a twice-yearly report to the principal.

c. Diagnostic testing. When a student encounters difficulty with an assignment in a basic skill area, a brief diagnostic test is administered by the teacher or aide. Such tests typically form a part of the materials designed for individualized instruction; in other instances, they will need to be developed. Diagnostic procedures provide an indication of prerequisite skills which have been inadequately learned or forgotten by the child. They therefore provide an indication to the teacher of a desirable next assignment, or review assignment, which will re-establish the desired competence in the individual student.

d. Attitude assessment. The assessment of student attitudes in areas such as cooperation, helping, control of aggressive acts, displaying kindness, and others, will be done by the teacher by means of checklists completed on each child at periodic intervals. Since such instruments are not currently available, they will need to be designed and fabricated prior to installation of the total system. Records of student attitudes are entered on Class Records. They form the basis for reports by teachers to parents, and items to be discussed in parent-teacher conferences.

e. Yearly testing. It is expected that tests of student achievement will be administered to all students near the end of each school year. Scores from these tests are used to compare the performance of pupils with the performance of other groups, as provided by age-level norms. As tests of the criterion-referenced variety become available under the Florida Assessment Program, these will be used in place of norm-referenced measures, subject to rules prescribed by the School District.

2. Teacher evaluation. The purposes of teacher evaluation are two: (1) to make possible personnel management in the form of counseling, and agreements on pay and career expectations between the principal and the individual teacher, and (2) to provide incentive salary increments for achieving goals of an individualized system. Records available to teacher and principal during personnel interviews include (a) Class Record forms indicating student progress for the group of students under the teacher's care and guidance; (b) yearly test records providing quantitative averages of student progress scores; and (c) records of teacher evaluation for factors of "learning support."

a. Class Records. At half-yearly intervals, teachers will prepare and submit to the principal summary records of student progress indicating the progress of each child in each basic skill area in terms of skills mastered; in each generalizing area in terms of number and type of activities successfully completed; and summary indicators of student attitudes. Such records are made up for a

total class based upon the information contained in Student Record Cards.

b. Tests scores. Scores attained by the group of students under the care of the individual teacher are prepared by the principal from the results made available to him in the yearly administration of tests.

c. Evaluation of learning support by teachers. Another source of data on teacher performance comes from averaged ratings pertaining to various factors of learning support (such as "stimulating pupil interest," "supporting school policies," etc.). Such averages are obtained by combining ratings from fellow teachers with those made by the principal. (Provision may be made to incorporate student and parental ratings in these averages, when the system is in full operation).

F. Personnel Management

The institution of a system of individualized instruction requires that attention be given to the provision of incentives for the teaching staff, related to the performance of functions which are non-traditional. The transition to a system which awards incentive salary increments related to teacher performance can be accomplished over a four-year period. It should begin with a "bonus" incentive award in the first year (which would be the school year of the Development-Training Phase, according to the plan being described here). The extra amount of funds for incentive awards would be reduced progressively during the four years, so that the procedure for awarding increases in salary each year would become at the end of that period a regular part of the salary-determination process.

1. Basic description. The plan for incentive salary increments related to teacher performance begins with an initial allocation of a sum of $400 per teacher ($10,000 for a staff of 25). Half of this amount is to be shared among the teaching staff on the basis of evaluations of performance in learning support; and half on the basis of measured progress in student achievement. The determination of quantitative factors applying to each teacher's performance in the former area derives from averaging ratings by fellow teachers and by the principal. The determination of performance in promoting student achievement is based upon progress scores based upon yearly test scores, reconciled with Class Records of student progress.

2. Funding. District support will be provided to fund incentive awards in the student achievement and learning support domains for a period of four years. From an initial amount of $400 per teacher for the first year, a step-wise decrease will be programmed so that at the end of four years, this incentive award fund will be provided by the

County from traditional yearly salary-increment funds. The incentive portion should be 75 to 100 percent of the total allocated for salary increases in any given year.

3. Allocation of incentive awards. Approval of items to be used in the two evaluation areas of learning support and pupil achievement will be by teachers, principal, and district representatives. The suggested allocation of these two areas is fifty-fifty. The methods of allocation for learning support apply to all areas of the curriculum, beginning with the school year of the Installation Phase (1973-4); those in the student achievement domain will begin with mathematics, reading, and language skills during this period, phasing into other areas of the curriculum during a later phase.

   Allocations in both learning support and student achievement domains will be referred to the team of teachers within each "Little School," who will make recommendations to the principal for allocation of the sum awarded to their group. A flow chart describing the allocation system is shown in Figure 1.

G. Financial Management

In allocating financial resources to a planned step-by-step program for an elementary school, it must be borne in mind that one of the goals of the program is to provide better instruction at equal or lower cost. In order to achieve this goal, however, it will be necessary to obtain added financial support for preparation and developmental phases, and perhaps also for the beginning portion of the installation phase. Such costs need to be carefully distinguished from those required to operate a new program. The determination of operational costs will be made during the Development-Training phase, by means of an analysis of projected requirements.

1. Cost categories. The process of developing a cost model incorporating major cost sub-categories has been outlined in Report No. 3., August 31, 1971, "A Design for Administration and Management of a System of Individualized Instruction in an Elementary School," pp. 35-47. The following major categories of resource allocation are suggested.

   (1) Human resources: professional staff, clerical and maintenance staffs, paraprofessionals.

   (2) Instructional materials: Materials and kits for all areas of the curriculum.

   (3) Evaluation and reporting materials: tests to be purchased or reproduced; printing of Student Record Cards, Class Records, Report Cards, Student Assignment Folders, and other implementing forms.

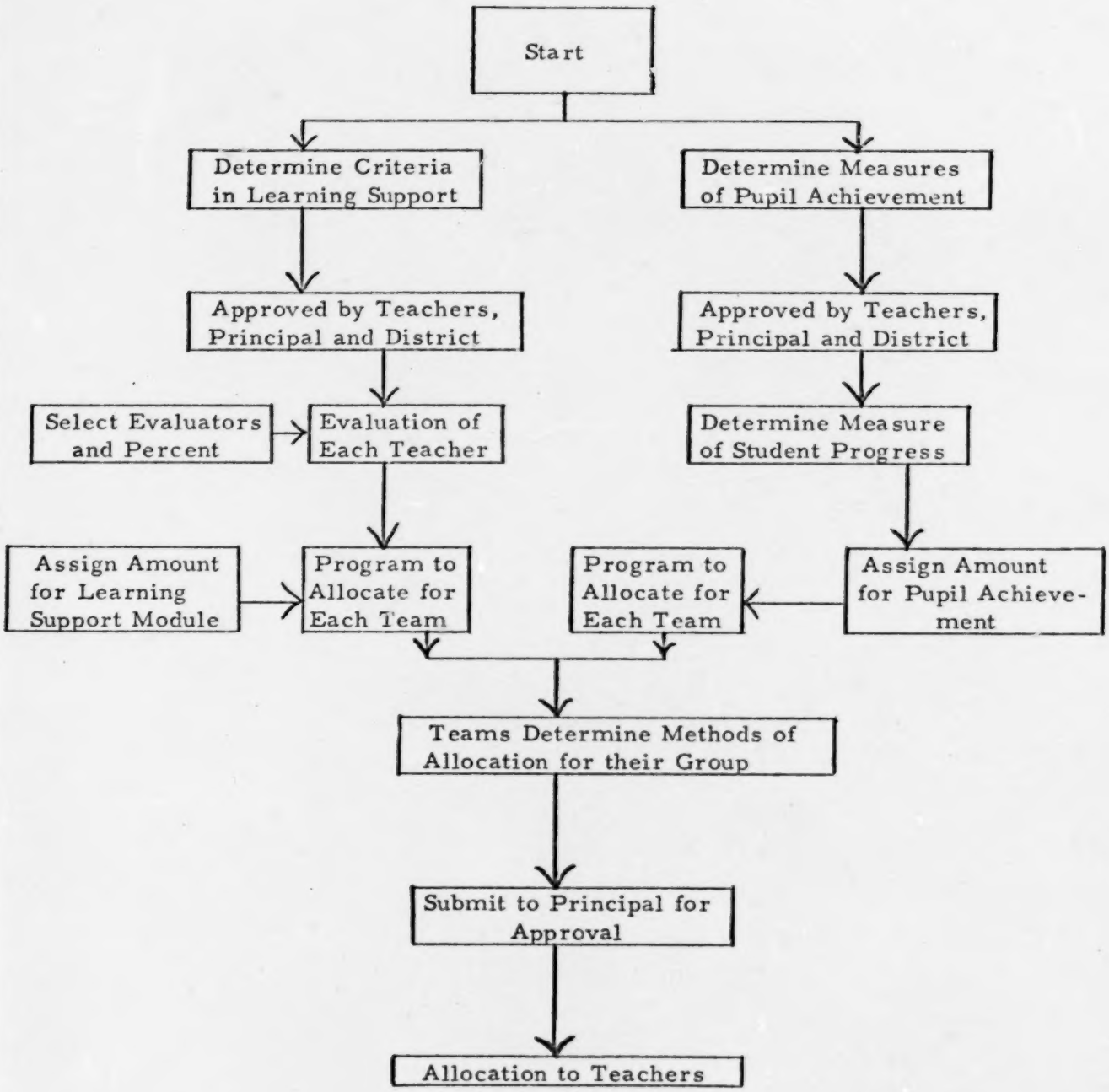
Start
Determine Criteria in Learning Support
Determine Measures of Pupil Achievement
Approved by Teachers, Principal and District
Approved by Teachers, Principal and District
Select Evaluators and Percent
Evaluation of Each Teacher
Determine Measure of Student Progress
Assign Amount for Learning Support Module
Program to Allocate for Each Team
Program to Allocate for Each Team
Assign Amount for Pupil Achievement
Teams Determine Methods of Allocation for their Group
Submit to Principal for Approval
Allocation to Teachers

Figure 1. Flow Chart of Allocation of Incentive Salary Increments

(4) Added furnishings and equipment.

(5) Revised cost analysis and accounting system for the school.

(6) In-service education.

(7) School-community relations activities.

Three financial tasks must be undertaken: (a) budget requests; (b) allocations; and (c) internal accounting.

2. Budget requests. It will be the principal's responsibility to assess the various needs, translate them into costs, and transmit this information to District and Central Offices. Since the new programs will require careful item-by-item assessment, the system should be developed during the Development-Training period with assistance from a person skilled in preparing budget requests.

3. Allocations. The principal must have authority to make allocations and reallocations as necessary after the budget is approved and funded. Such changes might be allowed within an account, from one account to another, or by the use of contingency funds. This implies the granting of greater discretion to the principal than is customary.

4. Internal accounting. Accurate cost accounting will require a new and more precise internal accounting system. Such a system must satisfy the requirements of the District, but it must contain a detailed breakdown to identify the cost of each element of the program. The adaptation of existing practices, and the development of new ones, needs to be undertaken under the leadership of Central Office personnel during the developmental phase.

H. Parental and Community Involvement

Parental involvement, as one of three characteristics of the design for an optimized system of elementary education, is an essential element of the plan, not merely an adjunct. A study of schools where programs of individualized instruction and peer tutoring are components provides evidence that these innovations are outstandingly successful where parents are well informed about the school program and deeply involved in it. Schools which have been most successful with such programs are in fact true "community" schools, offering opportunities for the adults as well as for the children of the community, adapting their facilities to multiple use by persons of all ages. The success of the total school program is likely to be largely dependent upon the process of involving parents.

1. Purposes. A close relationship between the school and the community and especially between the school and the parents, has four purposes:

(1) To inform parents about the operation of the school and its objectives, and to keep them informed of the progress of their children.

(2) To include parents in the direction and operation of the school's program.

(3) To provide instructional and recreational programs for adults in the school at night, on Saturdays, and during the summer.

(4) To establish working relations with the community, to encourage interest and assistance, and to facilitate student exploration of the community.

Parents can become involved initially only by the persistent work of a few members of the school faculty aided by a nucleus of interested parents. These "recruiters" will have to employ salesmanship, cajolery, urging, or other kinds of social pressure with other members of the faculty and with the parents of the community. Parents must be enlisted to help in formulating the school program, supporting it, and using it.

2. Procedures. Elements of a program designed to enlist and maintain parental support consist of the following: (1) a preliminary survey of parental opinions about desirable school goals (see Report No. 2, August 31, 1971, pp. 25-30); (2) development and administration of a school-community survey, analysis of results, and reporting of findings to the community; (3) the design and inauguration of an adult program in the school, the composition of which will be derived from results of the survey; (4) development of procedures for informing parents about the work of the school and the progress of the newly instituted school program; (5) recruitment and utilization of parents and other community members volunteering to work on various aspects of the school program.

III. Actions Required of County and District Officers

Thi Section describes in brief terms the decisions and actions which need to be taken by the School District (County) Superintendent, or by the staff under his direction, in order to bring into being and to maintain the enterprise of developing and installing the optimized system of elementary education portrayed in section II. Some of these actions will undoubtedly be performed by the District Superintendent, but most will require consideration by a Central Office staff. They are listed here in a form which indicates their time phasing.

A. Preparation Phase (1 November 1971 to 1 July 1972).

1. Teaching staff development. Plans should be approved for inservice education of teaching staff, and funds allocated for this activity. The training is to be done during the school year, and consists mainly of providing teachers with a conceptual understanding of individualized instruction, placement and diagnostic assessment of pupils' achievement, learning for mastery, and the contingency management of learning situations. (This training is to be followed by a summer workshop; see next section). Funding is required for consultants and for packaged training materials. Support may also be provided by training teams within the District itself.

2. Proposal for development and installation. A proposal for a development and installation effort should be prepared, coordinated, reviewed, and approved. The proposal is designed to initiate and continue the activity required to put into effect the new system for elementary education. It is to be submitted under state or federally supported programs for innovative practices, such as those under Title III of ESEA. Budget estimates are $160,000 for the Development-Staff Training Phase; $90,000 for the Initial Installation Phase; and $50,000 for the Future Installation Phase. Funding is required to support the varied efforts described in a following section (Actions Required of the Development Team). Generally, they fall into the categories of (1) teacher training in new procedures; (2) design of a comprehensive individualized curriculum which fits together diverse components; and (3) development of ancillary materials essential to the successful installation of an individualized system, such as test items, record forms, tutoring procedures, assignment sheets, student work folders, and others.

3. Appointment of Program Director. The development and institution of a new program will require the appointment of an individual with demonstrated qualities of leadership to organize and manage the program. Preferably, he should have considerable experience in conducting large-scale efforts of this kind, and the technical knowledge to insure a thorough understanding of

system goals. As the leader of the program effort, he must be able to supervise highly-trained development specialists on the one hand, and to work closely with principal and teachers of the school, on the other.

4. Departures from standard rules. Appropriate requests should be made for waiver of state regulations and the application of state laws, on the basis of departures from these rules contemplated in the design of the new system. Such departures are considered to occur mainly in two areas: (1) the choices of subjects in social studies or health by students; and (2) the provision of incentive increments in salary based upon teacher performance.

5. Planning for the new system. County and District officials should review, discuss, and confirm the plan for development and installation of the new system with the school principal and the school staff. Support of the plan by the District Superintendent needs to be emphasized in one or more meetings with the school staff.

6. Conducting a school climate study. In order that adequate planning can be done for program development and installation, a study of the organizational climate of the school needs to be made (see Appendix C). The results of such a study are expected to reveal the degree of esprit and free communication among staff members, and the nature of their interactions with the principal. These indications provide important background information against which plans for school staffing, teacher education, and staff participation in the program can be made.

7. School staffing. A careful review should be made of the staffing of the school, and the readiness of its staff to undertake a new venture. Conferences should be held with the principal and with staff members to discover sources of job satisfaction and the climate of confidence within the school. Requests for transfer of staff who are uninterested or opposed to the new system should be carefully considered, and changes approved when deemed desirable.

8. Materials costs. The costs of curriculum materials designed for individualized instruction need to be planned with the aid of school personnel, and additional funds allocated for the purchase of these materials, when necessary. During the Development and Staff Training Phase, materials are needed for programs in mathematics, reading, and language arts (see Section II, Description of the System, B. Curriculum).

B. Development and Staff Training Phase (1 July 1972 to 15 August 1973).

1. Funding of development. Funds should be allocated for the development-training effort, based upon available or expected project funding. The

budget for this phase of the project is relatively heavy, owing to the expected occurrence of two summer workshops for teachers (1972 and 1973), and the utilization of specialized professional personnel in the development of many kinds of ancillary materials (see Section IV, Actions Required of the Development Team). The latter activities are planned to occur at the same time, and to interact with, teacher tryouts of individualized programs in mathematics and reading.

2. Funding of training for teaching staff. If not covered by project funds, arrangements should be made to allocate additional funds for staff training. As described in the previous paragraph, two summer workshops are needed for the entire staff. The first of these aims at insuring the required competencies for employing individualized materials in mathematics and reading (IMS Math, Criterion Reading), while the second provides training for installation of the total system, including all subjects of the curriculum, and using a non-graded approach. During the school year 1972-73, staff training is expected to require support for outside speakers and discussion leaders.

3. Participation of selected teachers in development activities. Provision should be made for staff member participation in the work of the development team, to accomplish the following: (1) designing an incentive system for salary increments of teaching staff, based on learning support and student progress; (2) reviewing and approving methods of student assessment; (3) determining criteria for program evaluation.

4. Initiation of salary increment plan. An agreement should be initiated with the school teaching staff to begin a salary increment plan based upon the factors of learning support and student progress, with an initial allocation of an extra amount computed at $400 per teacher. Funding of this incentive bonus is to decrease in steps over a four-year period, becoming the regular basis for computing yearly increments in salary. Based upon measures of effectiveness, funds are to be shared by groups of teachers in each Little School. (See Section II, F. Personnel Management).

5. Plans for parental participation. Review and approval should be given to plans for activities having the purpose of involving parents in the development of school goals and policies, and in participation in such programs, both at the elementary and adult levels.

6. Allocating funds for materials. Funding will be needed for the purchase of curriculum materials required to install the full program (see II, Description of the System, B. Curriculum). Particularly needed will be a variety of curriculum materials in the areas of science, social studies, as well as additional materials to be employed for the "generalizing" purposes of instruction, in mathematics and reading. These are, of course, additional to those materials obtained in the previous year, in mathematics, reading, and language skills.

C. Initial Installation Phase (15 August 1973 to 15 June 1974).

1. Continued inservice education. Support should be continued for teaching staff in-service education, by allocation of funds and other resources. Although the primary source of instruction during this period may be considered to be on-the-job training, some provisions probably need to be made for speakers and discussion leaders during the school year.

2. Increments to teacher salaries. Review should be undertaken of the teacher salary increment incentive system in terms of its effects, and a reasonable decrease in the amount provided for this purpose decided upon. Since the amount is to decrease from $10,000 (per 25 teachers) to zero over a four year period, the second-year allocation might be set at $7500-$8000 (per 25 teachers). See Section II, F. Personnel Management.

3. Program evaluation. One or more on-site evaluations of the program should be conducted, based largely upon impressions gained from unobtrusive observations and interviews with staff members and pupils.

4. Meetings of Coordinating Council. District personnel should participate in meetings of the school Coordinting Council, concerned with progress and difficulties encountered in execution of the newly installed system. This Council contains representatives of teachers, principal, and District staff, and makes recommendations for policy changes as deemed desirable, which are reported to the District by the principal. (See Section II, D. Instructional Program--Communications).

D. Future Installation Phase (July 1974 - July 1975 or 1976).

1. On-site evaluations. Visits to the school for the purpose of conducting evaluations of the sort previously described should be continued during this period, to judge success of the program.

2. Formal evaluation. County and District officers should review data and results from formal evaluation of the new program, pertaining to student achievement, student attitudes, parental attitudes, teacher satisfaction.

3. Coordinating Council meetings. Participation in meetings and work of the school Coordinating Council should be continued.

4. Plans for transporting the system. Plans should be formulated for transporting the system to additional schools. Such schools need to be designated in prior years, and staff orientation begun by visits to the installing school. Materials and procedures can be identified and copies for transportation to an additional school or schools, with allowance for adaptations to meet specific local needs.

IV. Actions Required of the Development Team

The design of an optimized program of individualized instruction, as described in Section II, makes it readily apparent that taking the step to installation necessitates an intervening development effort. However strongly one may hold to the determination of making maximal use of available "instructional materials," one nevertheless soon runs head-on into the realization of tremendous gaps in the availability of materials in certain essential areas, as well as of the virtual absence of ancillary products that make possible the practice of instruction which is genuinely aimed at the individual student. Particularly striking examples of these deficiencies are the following:

(1) Exercises (or tests) which pinpoint learning difficulties associated with the learning of particular skills in mathematics

(2) Concordance of materials relevant to milestone skills in reading (expected to be available soon for Criterion Reading)

(3) Material suitable for individual student use in such language skills as spelling and writing

(4) Instructional materials and equipment for use by individual students and teams in elementary science, particularly at the primary level

(5) Well-designed games and simulations in social studies which can be used by teams and groups of students

(6) Cross-indexed lists of materials available for instruction in basic skills, and coordinated lists relating these to generalizing activities in other subjects

(7) Methods and materials for recording student progress on an assignment-by-assignment basis

(8) Materials to accompany lessons and exercises, designed to provide directions to students for proceeding with learning tasks (in most subjects)

(9) Placement, diagnostic, and assessment tests of student performance, containing criterion-referenced items.

Materials available for an individualized instruction system have been surveyed and reviewed in Report No. 2, August 31, 1971, and in Appendices A and B to this report. Nevertheless, the deficiencies cited are present, and

must be corrected by a fairly comprehensive development effort. The scope of the necessary effort is outlined in the following paragraphs. Naturally, the most concentrated effort is conceived as occurring during the Development and Staff Training Phase. Some activities may be undertaken earlier, while some require time and experience extending beyond this phase.

A development team is conceived as being led, in the sense of technical direction, by an educational development specialist who has been trained in educational technology, and who preferably has some experience in R & D project management. Several people of similar training and experience will be needed as the key members of this team, with specializations in instruction, management, and fiscal affairs. In addition, the team should contain several teachers, and several research assistants. Part-time members of the team may be District administrative personnel, a school principal, and other teachers.

The major components of the work of the development team are (a) specifying requirements for teaching staff development in preparation for the installation of the new system; (b) selecting and adapting curriculum materials, and developing portions to fill gaps; (c) designing and developing many kinds of ancillary materials, forms, tests, and reports which will weld together the "pieces" into a total feasible system; (d) as a special part of (c), adapting existing systems and procedures for student tutoring and other forms of student participation in instruction to the new system's requirements; (e) selecting or developing measures of achievement and attitude which can serve the purpose of summative evaluation of the program; (f) developing a budgetary system for the school which will provide realistic cost estimates for the installed system; (g) developing and obtaining approval for an incentive salary increment system for the teaching staff; and (h) specifying the goals and desirable features of parental and community involvement with the work of the school.

A. Preparation Phase (1 November 1971 to 1 July 1972)

1. Specifying requirements for teacher inservice education. Requirements should be specified for the inservice education of teaching staff during this period, and also during the workshop planned for the summer of 1972. The purpose of inservice education during this phase is to provide teachers with knowledge about and initial competencies in methods of contingency management (Section VI A). The 1972 summer workshop should be designed to familiarize teachers with procedures and materials for individualized instruction, with particular attention to IMS Math and Criterion Reading (Section VI B). The team will need to draw on objectives for such training, identify sources and personnel, and assist the school in planning of staff development activities.

2. Preparing grant proposal. The development team assists in the preparation of a proposal describing the system and its development and training requirements, with the intention of seeking funds to support activities in the Development and Training Phase and later phases.

3. Identification of materials and requirements. Efforts are undertaken to identify available and adaptable curriculum materials for individualized instruction, and the modifications or additions required to make these materials usable (see Report No. 2, August 31, 1971, and Appendices A and B to this report). Initial identification of materials to be tried out during the Development and Training Phase is directed to curricula in mathematics and reading. Records, tests, and reporting forms for available curricula (IMS Math and Criterion Reading) should also be identified and related to those under development for the total system.

4. Developing school organization. Assistance is given to the planning and establishment of divisions of the school (called "Little Schools") which look forward to the installation of a partially ungraded system. Along with such a change will go the initial establishment of a communication system among teachers and between teachers and principal, involving weekly coordination meetings.

5. Designing a salary increment system. Discussions are initiated of a system of incentive salary increments for teachers, based upon indicators of "learning support" and "student progress in achievement." Explorations should be conducted with the teaching staff concerning how such a system could be designed and fairly administered.

6. Survey of parental attitudes. An initial study is conducted of parental opinions and values relevant to the goals of elementary school education. On the basis of the methodology used and the results attained, plans are made to design a comprehensive study of parental and community attitudes towards the school, its policies and activities, and the role of adults in support of its goals.

B. Development and Staff Training Phase (1 July 1972 to 15 August 1973)

Major emphasis on developmental activities occurs during this phase of the program. Many products and procedures must be adapted, refined, or developed to meet the requirements of the total system, as outlined in Section II, for initial installation by the beginning of the school year, 1973. It seems desirable to describe the required developments in categories corresponding to those previously used in Section II, Description of the System.

1. Selecting and Adapting Curriculum Materials. Although some curriculum materials have been specified in Section II, adaptations are necessary, and additional selections must be made for other areas of the curriculum.

a. Kindergarten. A systematic review will be needed of available materials, including the SWRL Instructional Concepts Program and the Open Court Kindergarten Program, to insure that these are capable of covering required objectives in basic skills. In addition, other materials in such areas as oral language (see Appendix A) may need to be reviewed, selected, and adapted. A total kindergarten program can then be designed, tabulated or placed in chart form for easy accessibility and use by teachers. Coordination of these objectives with those of "first grade" materials (Criterion Reading and IMS Math) will also be necessary.

b. Basic skills, 1-6. Monitoring of successes and deficiencies encountered by pilot use of the Criterion Reading Program and the IMS Math Program should be undertaken on a regularly scheduled basis during the school year. Review of results from these activities will provide a basis for revision of materials, forms, and procedures relevant to the total individualized program.

The development team identifies, adapts, and develops ancillary materials for additional language arts areas. Statements of objectives, placement, diagnostic, and mastery tests, student assignment sheets, record cards, and related materials are designed, where not currently available, for the areas of spelling, composition, and handwriting (see Section II, B, 2 and Appendix A). Other areas for which materials may be identified and developed are learning and thinking skills, listening and viewing skills, and oral language skills.

A special effort must be made to identify materials for social interaction skills. Materials for this important area of the foundation curriculum (see Report No. 1, p. 9) currently appear hard to find. The development team may need to undertake development of original materials and methods for objectives in this area.

c. Generalizing activities, 1-6. As is pointed out in Section II, B 3 Generalizing Curriculum, the materials in this area covering such subjects as Science and Social Studies are not all immediately usable as "independent" activities to be undertaken by individual children, pairs, or groups. Development will need to be undertaken of instructions for independent learning, self-assessment exercises, assignment sheets, and guides for assessment of the learning accomplished.

In addition, indexes of generalizing activities will need to be prepared, designed to show the teacher (and the student) what generalizing activities are available in the several areas of science, social studies, music and art. All of the available activities in each subject area will be categorized at various "skill levels," that is, a cross reference will be provided to prerequisite skills, in order that appropriate assignments can be suggested

and chosen. Programs of available generalizing activities will be worked out by the development team, with consultation by specialized teachers, in music, art, mathematics, and reading.

In addition, programs designed for group activities by same-age groups are developed or adapted in the fields of music and physical education. The special teachers in these areas should contribute to specification of objectives, identification of materials and development of recording forms (see Section II, B 4).

2. Instructional procedures. Two major factors contribute to the smooth operation of an individualized system: (1) the skill of the teacher in carrying out procedures of contingency management and other more specific procedures of diagnosis and assignment; and (2) the forms, directions, and record sheets and cards that are used to implement the teacher's decisions. The several record forms and sheets which need to be developed are described in succeeding paragraphs, followed by an account of procedures for student tutoring.

a. Developing teacher skills. During the previous phase the development team has specified the requirements for inservice education and for the 1972 summer workshop. During this phase the team specifies the requirements for the 1973 summer workshop, emphasizing review of contingency management techniques, knowledge of operations of the total system, and practice of specific procedures with children (see Section VI, B, 7).

b. Developing record forms. The variety of forms requiring development includes the following:

(1) Student Record Cards. Prototypes for the development of these Cards for all areas of foundational skills are provided by those for IMS Math and Criterion Reading, with which the program of individualized instruction begins.

Student Record Cards contain information on a large segment of skills in one area of the foundational curriculum. These cards, one for each child, are to be kept and used by the teacher as an ongoing record of the child's mastery of skills. These cards are used in planning sessions with the child, and become part of the student's permanent file.

The recommended Student Record Card for IMS is a modified version of the Student Profile Form which is supplied by the publishers. In addition to the units, the modified form includes space for recording mastery of the skills within each unit (see Figures 2 and 3). Two forms are suggested--one covering Levels I through V, and the other covering Levels V through IX.

Name	I	II	III	IV	V
Numeration	1 5 9 2 6 10 3 7 11 4 8	1 5 2 6 3 7 4 8	1 5 9 2 6 10 3 7 11 4 8	1 5 2 6 3 7 4 8	1 2 3 4
Addition	1 2 3 4	1 4 2 5 3 6	1 4 2 5 3	1 4 2 5 3	1 5 2 6 3 7 4 8
Subtraction	1 4 2 5 3	1 4 2 5 3 6	1 3 2 4	1 3 2 4	1 4 2 5 3
Multiplication	1 2 3	1 4 2 5 3 6	1 2 3	1 4 7 2 5 8 3 6 9	1 4 2 5 3 6
Division	1	1 3 2 4	1 3 2 4	1 4 2 5 3 6	1 4 2 5 3
Fractions	1	1 2	1 4 2 5 3	1 4 2 5 3	1 4 2 5 3 6
Mixed Operations	1 2 3	1 2	1 4 2 5 3	1 3 2 4	1 3 2 4
Money	1 2	1 3 2	1 2	1 3 2	1 3 2
Time	1	1 2	1 2 3	1 4 2 5 3	1 4 2 5 3 6
Measurement	1 2 3	1 4 2 5 3	1 4 2 5 3	1 3 2 4	1 3 2 4
Geometry					

Figure 2. Student Record Card for IMS Math, Levels I through V.

Name	V	VI	VII	VIII	IX
Numeration	1 2 3 4	1 5 9 2 6 3 7 4 8	1 4 2 5 3 6	1 2 3	1 2 3
Addition	1 5 2 6 3 7 4 8	1 2 3	1 2	1 2	1 2 3
Subtraction	1 4 2 5 3	1 3 2 4	1 2	1	1 2 3
Multiplication	1 4 2 5 3 6	1 4 7 2 5 8 3 6	1 4 2 5 3	1 3 2 4	1 3 2 4
Division	1 4 2 5 3	1 4 2 5 3 6	1 2 3	1 4 2 5 3	1 3 2 4
Fractions	1 4 2 5 3 6	1 4 2 5 3 6	1 4 2 5 3 6	1 4 2 5 3 6	1 2
Mixed Operations	1 3 2 4	1 3 2 4	1 3 2 4	1 2	1 3 2 4
Money	1 2 3	1 2 3	1 2		
Time	1 4 2 5 3 6	1 4 2 5 3	1 2 3	1 2 3	
Measurement	1 3 2 4	1 3 5 2 4	1 3 2	1 3 5 2 4	1 3 5 2 4
Geometry					

Figure 3. Student Record Card for IMS Math, Levels V through IX.

The recommended Student Record Card for Criterion Reading is a substitute for the Student Profile Booklet. Although the teacher may want to let the student use the Student Profile Booklet as his own record, the Criterion Reading Record Card provides mastery information at a glance. Two forms are suggested--one covering skills in Level 1 (except the motor skills) through Level 3, and the other covering skills in Levels 4 and 5 (see Figures 4 and 5). The skills are identified by number according to the sequential arrangement in the system with the dark lines separating one type of skill from another. For example, phonology skills are listed first, then structural analysis skills, etc.

(2) Assignment Sheets. These contain information about the materials which the individual child should use to learn the indicated skills. These forms are kept by the student to guide him to his learning activities during the day. There are at least three forms of this type.

The assignment sheet for IMS Math is the Prescription Sheet supplied by the publishers and used as indicated in the Users Guides. There are numerous Criterion Reading Assignment Sheets--one for each skill (Figure 6). At the top of the page is the performance objective for the skill, on the left are listed the resource materials available to the student, and on the right are columns for recording which materials are assigned and the student performance on each.

All other assignments may be listed on the Daily Assignment Sheet. This form is used for the areas in the foundations curriculum other than math or reading, and for designating the chosen generalizing activities. A suggested format is shown in Figure 7.

(3) Student Folder. Each student should have a duo-tang folder with pockets in which to keep his work, his assignment sheets, and a flag to signal for assistance. The flag may be a folded piece of construction paper which is easily visible as it stands on the desk. The daily Assignment Sheet should be clipped to the outside of the folder. One pocket inside is used for the Criterion Reading Assignment Sheet and related materials. The other pocket is used for the IMS Prescription Form and related IMS materials. Other work may also be kept in the folder.

(4) Class Record. The class record contains information concerning mastery of basic skills and participation in generalizing activities for all students in a given homeroom. The purpose is to give the teacher some indication of the rate of learning of her students. At a glance she should be able to see which students are not progressing very rapidly in a given area. The teacher can then focus extra attention on her assignments for these students. The class record should include all milestone objectives in each area of the basic skills curriculum, a record of generalizing

NAME _____ Criterion Reading Record Card

12-3	12-4	12-5.1	12-5.2	12-5	12-6	12-7	12-8	12-9	12-10	12-11.1	12-11.2	12-11	12-12.1
12-12	12-13.1	12-13.2	12-13	12-14	13-1	13-2	13-3	13-4	13-5	13-6	13-7	13-8	13-9
13-10	13-11	13-12	13-13	13-14	13-15	13-16	13-17	13-18	13-19	13-20	13-21	13-22	13-23
13-24	13-25	13-26	13-27	13-28	13-29	13-30.1	13-30.2	13-30	13-31	13-32	13-33	13-34	13-35
13-36	13-37.1	13-37.2	13-37	LEVEL 2	24-1.1	24-1.2	24-1.3	24-1	24-2.1	24-2	24-3	25-1.1	25-1
25-2	25-3	26-1	26-2	26-3	26-4	26-5	26-6.1	26-6.2	26-6.3	26-6.4	26-6.5	26-6.6	26-6.7
26-6	26-7.1	26-7	26-8	26-9.1	26-9.2	26-9	27-1	27-2	27-3	28-1	28-2.1	28-2.2	28-2
28-3.1	28-3	28-4.1	28-4	28-5.1	28-5.2	28-5	28-6	LEVEL 3	34-1.1	34-1.2	34-1.3	34-1.4	34-1
34-2.1	34-2	34-3.1	34-3	34-4.1	34-4	34-5.1	34-5	34-6.1	34-6.2	34-6	34-7.1	34-7.2	34-7
34-8.1	34-8.2	34-8	34-9.1	34-9.2	34-9	34-10.1	34-10	34-11	34-12.1	34-12	34-13.1	34-13	34-14
35-1.1	35-1	35-2	35-3.1	35-3.2	35-3	35-4.1	35-4	35-5	35-6.1	35-6	35-7.1	35-7	36-1
36-2	36-3	36-4	36-5	36-6	36-7	36-8.1	36-8.2	36-8.3	36-8.4	36-8.5	36-8.6	36-8.7	36-8
36-9.1	36-9	36-10	36-11.1	36-11	36-12	36-13.1	36-13.2	36-13	36-14.1	36-14.2	36-14	36-15	37-1
37-2	37-3	37-4.1	37-4.2	37-4	37-5	37-6	37-7	38-1.1	38-1.2	38-1	38-2.1	38-2.2	38-2.3
38-2	38-3.1	38-3.2	38-3.3	38-3.4	38-3	38-4.1	38-4.2	38-4	38-5.1	38-5.2	38-5	38-6.1	38-6

LEVEL 1 MOTOR SKILLS

form A

Figure 4. Student Record Card for Criterion Reading, Levels 1 through 3.

NAME _____ Criterion Reading Record Card

									LEVEL 4	44-1	44-2.1	44-2	44-3.1
44-3	44-4.1	44-4	44-5	44-6	44-7	45-1.1	45-1	45-2	45-3.1	45-3	45-4.1	45-4.2	45-4.3
45-4.4	45-4.5	45-4.6	45-4	45-5.1	45-5	45-6.1	45-6	45-7.1	45-7.2	45-7	45-8.1	45-8	45-9.1
45-9	45-10.1	45-10.2	45-10	45-11.1	45-11.2	45-11	46-1	46-2	46-3	46-4	46-5.1	46-5.2	46-5
46-6	46-7	46-8	46-9	46-10.1	46-10.2	46-10.3	46-10	46-11	46-12	46-13.1	46-13.2	46-13	47-1.1
47-1.2	47-1	47-2.1	47-2.2	47-2	47-3	47-4.1	47-4	47-5.1	47-5	48-1.1	48-1.2	48-1.3	48-1
48-2.1	48-2.2	48-2.3	48-2.4	48-2	48-3.1	48-3.2	48-3	48-4.1	48-4.2	48-4	48-5.1	48-5.2	48-5
48-6.1	48-6	LEVEL 5	54-1	54-2	54-3	54-4	54-5	54-6	54-7	54-8	54-9	54-10	54-11
54-12	54-13	54-14	54-15	54-16.1	54-16.2	54-16	55-1.1	55-1.2	55-1.3	55-1.4	55-1	55-2	55-3
55-4	55-5.1	55-5	55-6.1	55-6.2	55-6	55-7.1	55-7	55-8.1	55-8.2	55-8.3	55-8.4	55-8	55-9
55-10.1	55-10.2	55-10	56-1.1	56-1.2	56-1.3	56-1.4	56-1	56-2	56-3.1	56-3.2	56-3.3	56-3	56-4.1
56-4.2	56-4	56-5.1	56-5	56-6	56-7	56-8.1	56-8.2	56-8.3	56-8	56-9.1	56-9	56-10.1	56-10
56-11.1	56-11.2	56-11.3	56-11	56-12.1	56-12.2	56-12.3	56-12	57-1.1	57-1.2	57-1	57-2.1	57-2.2	57-2.3
57-2.4	57-2	57-3.1	57-3.2	57-3.3	57-3	57-4.1	57-4.2	57-4.3	57-4.4	57-4.5	57-4.6	57-4	57-5.1
57-5.2	57-5	57-6.1	57-6.2	57-6.3	57-6.4	57-6.5	57-6.6	57-6	57-7.1	57-7.2	57-7.3	57-7	58-1.1
58-1.2	58-1	58-2.1	58-2.2	58-2	58-3.1	58-3.2	58-3	58-4.1	58-4.2	58-4	58-5	58-6.1	58-6

form b

Figure 5. Student Record Card for Criterion Reading, Levels 4-5.

35.

Name_____

Date Started_____Finished_____

38-3 Given three passages and alternate sentences, the pupil infers the main idea from certain specific details with 95% accuracy.

Kits, Texts, Worksheets, etc.	Assigned	Possible Score	My Score	OK'd

Figure 6. Assignment Sheet for Criterion Reading

Name_____ Date_____

	Oral Language	Writing	Listening	Spelling	Social Studies
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					

Stories Read: Science Projects: Arts & Crafts:

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

_____ _____ _____

Figure 7. Daily Assignment Sheet

activities in which the student has participated, and data from attitude indicators. The class record can also be used for reporting student progress to the principal at half-yearly intervals.

(5) Six-Week Planning Chart. A six-week planning chart should be designed for the teacher's use in recording which skills she expects the individual student to acquire during the subsequent six-week period. This form may also be used with parents when planning for the year. Provision should be made for recording specific foundation skills which the student will master, the one or two social interaction skills which the teacher will particularly try to foster, and the types of generalizing activities which she may want to encourage.

(6) Report Card. The report card is the printed form for reporting the child's progress in school to the parents. The form should be usable for several reporting periods through the use of different colored pens for each period. The form should include space for checking those basic skills which the child has mastered since the last period. This should probably be arranged by the subject areas in the foundational curriculum. An example in the area of mathematics is shown in Figure 8.

The report should also show the extent to which the child is working up to his ability in each foundations area. This is a subjective opinion of the teacher, and if the teacher feels the student is not working up to his ability some plan for improving this should be considered.

The report should list those generalizing activities in which the student has participated. This may be done by categories as in the sample shown in the figure. A classroom behavior checklist may also be included.

A space for comments is used to convey additional information to the parents. For example, if the child is not working up to his ability in one or more of the foundation areas, the teacher and child may try to work out a plan and the teacher may describe it here. If some classroom behavior items are not checked, a comment needs to be made--perhaps identifying one or two behaviors which the teacher and child will concentrate on during the next period. Through proper use of the comments section, parents will be informed that any problems indicated in the report are being dealt with directly.

The report card is not to include any comparisons between children, but only to indicate the progress of a particular child in relationship to the skills which should be learned during school.

(7) Procedures for assigning and locating student tutors. A workable system needs to be designed for directing students to different locations in

Mathematics

This chart represents the math skills your child will learn in the elementary school. Your child has mastered all skills in the areas checked.

	I	II	III	IV	V	VI	VII	VIII	IX
NUMERATION									
ADDITION									
SUBTRACTION									
MULTIPLICATION									
DIVISION									
FRACTIONS									
MIXED OPERATIONS									
MONEY									
TIME									
MEASUREMENT									

Working up to Ability

A check indicates that your child is working up to his ability in the following areas:

_____Mathematics _____Written Composition
_____Reading Skills _____Handwriting
_____Oral Language _____Spelling

Generalizing Activities

Your child has participated in the following activities:

Social Studies	Science	Art	Music

Other:

Books Read:

Classroom Behavior

Most of the time your child does the following:

1 2 3 4 Periods

__ __ __ __ listens attentively.
__ __ __ __ follows instructions
__ __ __ __ accepts constructive criticism
__ __ __ __ works independently
__ __ __ __ works well with others
__ __ __ __ uses time wisely
__ __ __ __ completes assigned work
__ __ __ __ does neat work
__ __ __ __ takes care of personal belongings
__ __ __ __ takes care of school materials and property
__ __ __ __ respects and cooperates with people in authority
__ __ __ __ demonstrates responsible behavior outside his own classroom
__ __ __ __ makes exceptional efforts in the area of _____

Comments by the teacher

Comments by Parents

Please feel free to call 843-5321 to make an appointment for a conference with the teacher.

Figure 8. Suggested Components for a Report Card.

the building, when they are to become engaged in either tutoring or generalizing activities. The necessity for the teacher to be able to locate a pupil at any time during the school day must be recognized as an essential aim of such a system. In a school having classrooms of traditional size, a central locator positioned so as to have ready access to the classrooms in a primary section (three classrooms), and another having similar access to an intermediate section (three classrooms) appears to have desirable characteristics.

The central locator function may be performed by an aide or other paraprofessional. This person monitors containers on open shelves, positioned so as to display the number of the room to which they refer. The containers have three sections, each containing student locator cards. One section is intended for cards of students who are pursuing assignments in basic skills; another for cards of those engaged in generalizing activities which should not be interrupted; and the third for cards of students assigned to generalizing activities who have indicated their availability as tutors.

When a student completes a basic skills assignment, and decides upon a generalizing activity (by agreement with his teacher), he proceeds to the central locator with his locator card. The aide at the central locator reads from the card the notation made by the teacher as to generalizing activity assignment, and availability as tutor. His qualification as tutor in particular basic skills is also indicated on this card. She then checks the containers to insure that space is available at the station containing the activity, and places the pupil's locator card in the proper container.

While managing instruction in basic skills areas, the teacher may decide that a particular student would benefit from the help of a tutor. When this occasion arises, she sends the student to the central locator with the code number of the basic skill. The aide then locates a qualified and available tutor (see Section II C) by examining the information on the student profile cards which have been placed in the containers. The pupil then goes and gets this tutor, and they return to a location in the homeroom set aside for this activity, after the aide relocates the tutor's locator card.

3. Communications. As described in Section II D, meetings and communication networks will be devised and adapted from earlier forms by the school staff. The development team should act as advisers in this activity. The organization of the school is conceived as three Little Schools, each containing one kindergarten, three primary (1-3) and three intermediate (4-6) homerooms of children. Thus the basic organizational unit contains seven teachers and approximately 210 children, the latter ranging in age from five to twelve. Each Little School has an appointed leader, who coordinates the activities of the various homerooms, and presides at weekly meetings.

Communication among the staff of each Little School occurs in weekly coordination meetings (and of course informally at all times). Teachers of various grade levels (kindergarten, primary, intermediate) in all the Little Schools meet at less frequent intervals to discuss common problems. For the school as a whole, there is a coordinating council oriented to supportive relations with the community.

4. Evaluation. A variety of instruments and measures will need to be developed, with the purposes of (1) assessing student achievement in basic skills; (2) measuring student progress in knowledge and problem-solving skills in all areas of the curriculum; (3) obtaining indicators of student attitudes; and (4) devising a method for evaluating the effectiveness of the entire program. In addition, some means of assessment will need to be provided for certain kinds of activities which form an integral part of the system, such as teacher education and tutor training.

a. Achievement in basic skills. Programs designed for individualized instruction, such as IMS Math and Criterion Reading, contain tests of mastery which are used as the primary measures of student achievement. Similar kinds of criterion-referenced measures will need to be developed for other areas of language arts, including spelling and writing. Checklists of student behavior in social interaction skills will also require development.

b. Progress in knowledge and cognitive strategies. As instructional materials are developed for the generalizing areas of the curriculum, attention should also be devoted to the development of measures of knowledge attained by pupil activities in these areas and records of type and scope of participation. For the broader purpose of assessing individual development in learning and thinking skills, consideration needs to be given to the selection of norm-referenced tests in science, social studies, and other subjects, using items of these tests that are relevant to the objectives of the curriculum in each area. Tests from which selections can be made for this purpose are described in Report No. 2, pp. 51-62.

c. Indicators of student attitudes. Checklists or other instruments must be designed and built which will enable teachers to make and record observations reflecting pupil attitudes. A set of "coping behaviors" suggested by Spaulding, shown in Table 1, may serve as a model for categories in which behaviors are identified in this area. The applicability of checklists of this sort needs to be expanded into other areas of student attitude encompassing desirable social interactions.

d. Program evaluation. Evaluation of the effectiveness of the system should be planned to include summative measures of all expected outcomes, as indicated by the goals of the system (Report No. 1, p. 2). The areas assessed should include (1) student achievement in basic and generalizing

TABLE 1

A COPING ANALYSIS SCHEDULE
FOR EDUCATIONAL SETTINGS (CASES)*

---

1. Aggressive Behavior: Direct attack: grabbing, pushing, hitting, pulling, kicking, name-calling; Destroying property: smashing, tearing, breaking.

2. Negative (Inappropriate) Attention-Getting Behavior: Annoying, bothering, whining, loud talking (unnecessarily), attention getting aversive noise-making, belittling, criticizing.

3. Manipulating and Directing Others: Manipulating, bossing, commanding, directing, enforcing rules, conniving, wheedling, controlling.

4. Resisting Authority: Resisting, delaying; passive aggressive behavior; pretending to conform, conforming to the letter but not the spirit; defensive checking.

5. Self-Directed Activity: Productive working; reading, writing, constructing with interest; self-directed dramatic play (with high involvement).

6. Paying Rapt Attention: Listening attentively, watching carefully; concentrating on a story being told, a film being watched, a record played.

7. Sharing and Helping: Contributing ideas, interests, materials, helping; responding by showing feelings (laughing, smiling, etc.) in audience situations; initiating conversation.

8. Social Interaction: Mutual give and take, cooperative behavior, integrative social behavior; studying or working together where participants are on a par.

9. Seeking Support, Assistance and Information: Bidding or asking teachers or significant peers for help, support, sympathy, affection, etc., being helped; receiving assistance.

10. Following Directions Passively and Submissively: Doing assigned work without enthusiasm or great interest; submitting to requests; answering directed questions; waiting for instructions as directed.

11. Observing Passively: Visual wandering; watching others work; checking on noises or movements; checking on activities of adults or peers.

TABLE 1 (Cont.)

A COPING ANALYSIS SCHEDULE
FOR EDUCATIONAL SETTINGS (CASES)*

---

12. Responding to Internal Stimuli: Daydreaming; sleeping; rocking or bidgeting; (not in transaction with external stimuli).

13. Physical Withdrawal or Avoidance: Flight; moving away; hiding: avoiding transactions by movement away or around.

Note: Categories 5 through 10 are further coded as a or b in structured settings to indicate appropriate or inappropriate behavior (based on social expectations for the setting). Example: 5a would be recorded when a child was painting during art period (when painting was one of the expected activities). Painting during "story time" or an academic setting would normally be coded 5b.

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*Copyright, Robert L. Spaulding, Duke University. From Simon, A., and Boyer, E. Mirrors for Behavior: An Anthology of Classroom Observation Instruments. Philadelphia: Research for Better Schools, Inc., 1967.

areas; (2) teacher attitude and job satisfaction; (3) student attitudes; and (4) parental reactions. Development of specific instruments to permit the collection of data on these various outcomes will be required, although in some cases (such as student progress) the necessary data may be obtained from internal records such as Student Record Cards. The expected availability of criterion-referenced measures of student achievement, projected under the Florida Educational Assessment Program, will also constitute an important source of data for system evaluation.

A systematic plan will need to be prepared for collecting data from the various sources and instruments mentioned, and for making analyses and interpretations of these data.

5. Personnel management. One of the developments of primary importance to personnel management is the design of a system for allocating yearly increases in salary based upon measures of learning support and student achievement. The basic characteristics of the system are described in Section II F. The development team will serve as an advisory body to officers of the County and District in devising the basic structure of this plan.

A particular concern of the development team during this period will be the design of methods for assessing the two aspects of teacher performance which form the basis for the determination of salary increments. The suggestion is that these two measures be weighted 50-50 in computing the amount of salary increment to be shared by the group of teachers in each Little School. After the total amount for each group of teachers is allocated, the group recommends to the principal the distribution of salary increments among their members.

a. Determination of salary increments, learning support domain. Inputs to this process consist of (1) the total amount of funds to be allocated; (2) the types of evaluators to be employed; (3) weighting assigned to each evaluator; (4) criteria to be used in evaluation; and (5) the actual values assigned to each teacher.

The appraisal items suggested for the learning support domain are depicted in Figure 9. A scale of 1 to 5 will be used in the evaluation, with each evaluator assigning values for each teacher. Weighting percentages, totalling 100 per cent, should be assigned to each evaluator. The totals are summed to determine the amounts to be allocated to each teacher team.

A computer program has been written for this module, and can be used to reduce the clerical effort involved in determining incentive awards related to this area of teacher performance.

b. Determination of salary increments, pupil achievement domain. Measures of performance will be determined on the basis of the following information: (1) gain scores of student achievement in basic skills areas of the curriculum, based upon Student Records indicating progress during the school year, verified by yearly tests; and (2) modification factors for gain expectations based upon measures of motivation and pupil background factors. It may be noted that a system for quantifying these variables, and for establishing a fair formula for pupil achievement gains, needs to be constructed during a developmental period.

Percentages will be assigned for different ranges of student gain. For example, if the scale employed is related to the typical "grade gain equivalent" of standardized tests, percentages assigned might be as follows: 0 - .25, 0%; .25 - .50, 25%; .5 - 1.0, 50%; 1.0 - 1.5, 75%; 1.5 and greater, 100%. The totals for all students in a cluster will be calculated to determine the amount of salary increment to be allocated to each team of teachers.

A second computer program has been written to reduce the clerical effort in allocating the amount provided in this area. The program accepts as inputs the total amount to be allocated and the different range of gains

Teacher_____ Room_____

APPRAISAL ITEMS	DATE				
1. Maintains good discipline					
2. Is alert to and provides for individual pupil needs					
3. Uses evaluative criteria effectively					
4. Makes definite plans for class activities and procedures					
5. Stimulates pupil interest and eagerness to learn					
6. Shows knowledge of educational development and shows sound judgment in the use of techniques and materials					
7. Works well with others					
8. Understands and supports school policies and demonstrates a professional attitude in implementing them					
9. Contributes to the total program					

Figure 9. Items used in evaluation of teacher performance in the learning support domain. (Richmond Elementary School, Perrine, Florida).

(expressed as "grade gains"), with percentage gain for each range. The output is the total amount to be allocated to each teaching team.

6. Financial management

a. Allocation of resources. Members of the development team who are specialists in financial management need to work with representatives of the County and District staff to develop methods of resource allocation applicable to the new system of instruction which provide exact determination of the costs of all components. These components are listed in Section II G.

b. Budget requests. Advisory assitance will be furnished by the development team to the principal and District officers concerned with the preparation of budgets. During this period, budget requests will be prepared for the Installation Phase of the program. Experience with individualized instruction in reading and mathematics, the conduct of first stages of activities in parental and community involvement, and the beginning of student tutoring will be the sources of suggestions for revised budget requests in all areas. The compilation of needs is primarily the responsibility of the principal, and these are reviewed by District and Central Office personnel.

c. Internal accounting. A study of the internal accounting system, and its adequacy in reflecting costs accurately, needs to be undertaken during this period with the assistance of specialized members of the development team. Indications of the need for modication of the system, based on an analysis of experience with accounting during the Preparation Phase of the program, should be reviewed.

7. Parental involvement. Description of an initial and partial survey of parental opinions is contained in Report No. 3, pp 25-30. The information gained from this study encourages optimism with regard to involving parents in the determination of school goals, and underlines the need for instituting careful puplic relations actions in preparation for the planned innovations.

a. School-community survey. Based upon data and methodology previously developed, the team should undertake the design of a school-community survey which will include an adequate sample of all parents. The purposes of the survey may be listed as follows:

(1) Determining parental expectations concerning school goals.

(2) Discovering what parents want to know about school programs and about their children's progress.

(3) Exploring parental interests in participating in adult educational programs at the school.

(4) Determining the extent to which parents wish to participate in the work and affairs of the school.

(5) Acquiring basic data about the parents and the community, including economic, social, and political factors.

Work on the survey should include the participation of three teachers selected by the principal, and four parents chosen after consultation with existing parent groups or organizations. This team will draft a preliminary questionnaire, using others previously developed as models. The draft should be submitted to the school teaching staff for review and suggestions of changes, and a final form prepared to take account of these recommendations.

Further steps in the preparation and conduct of the survey include: (1) training faculty and parents in techniques of interviewing with the use of the survey instrument; (2) administering the survey; (3) tabulation and analysis of the data; and (4) reporting findings to the community in one or more well-advertised meetings.

b. Parental participation in the program. Plans need to be made for the various ways of involving parents in the conduct of the school program, based upon the results of the survey. Some additional areas of parental participation to be explored are described in Section VII, Actions Required of Parents, B 2.

C. Initial Installation Phase (15 August 1973 to 15 June 1974)

The activities of the development team during this phase of the program consist largely of developments which are unfinished or which require revision, redesign, or refinement. Accordingly, such actions may be described briefly as continuations of those outlined in the previous section. The primary area in which an increase of activity is expected to occur during this time period is that of program evaluation. Once the parts are all in place, attention of the team can be devoted increasingly to the formulation of a method of finding out how well the total system operates, and how effective it is in achieving its goals (Section II, Assumptions).

Continued development, revision, and refinement of procedures is expected to be the concern of the development team in the following aspects of the program:

(1) Curriculum materials, particularly in activities for the generalizing areas of science and social studies, including further identification, selection, and development of games, simulations, and laboratory exercises

(2) Materials and procedures for systematic instruction in social interaction skills, such as cooperating, helping, persuading, etc.

(3) Instructional procedures, including the revision of record-keeping procedures and materials and the refinement of techniques for locating and assigning students to study areas

(4) Continuing development of measures of student achievement, particularly in generalizing areas, emphasizing the assessment of learning and problem-solving abilities

(5) Continued development of measures of student attitudes, primarily in the realm of interpersonal relations

(6) Revision of budgeting categories, as may be indicated by experience with their use during the preceding phase

(7) Review and refinement of the internal accounting system for the school

(8) Review of procedures for communicating with parents, and for informing parents about school and program goals.

In addition to these continuing lines of development, certain activities may be expected to constitute foci of effort during this period. These are as follows:

1. Designing a computer-based system. A system for data management by computer needs to be designed for rapid input, processing, and output of information on student achievement and long-range progress.

2. System evaluation. A comprehensive procedure for assessing and interpreting the effectiveness of the new system needs to be developed. The various records of student performance and attitudes, teacher attitudes, and parental opinion measures which have been collected during the preceding phase should be reviewed to identify those which are most useful for this purpose. Specific plans should be made to employ data from yearly testing, or selected portions of them, for purposes of evaluating the system.

3. Planning for system transportability. Complete revision should be undertaken of the description of the system, following the format of the present

report, in order to make possible its installation in other schools. Details of use of individualized instruction materials need to be added, based upon records and reports derived from experience in the previous phase (see Section VI B). Revisions in teacher procedures and student-used materials should be similarly derived. In general, a description of the system aimed at transporting it to other schools should include the following elements: (a) objectives and identification of materials and resources for teaching staff training; (b) identification of basic skills materials adaptable for individualized instruction; (c) identification and indexing of materials in science, social studies, and other generalizing areas of the curriculum; (d) description of record forms, assignment sheets, tests, and other materials required to implement the system; (e) materaisl for tutor training and description of the management system for tutoring; (f) policies and procedures for personnel and financial management of the school; and (g) materials and plans pertaining to the involvement of parents in the determination of school goals and the support of student learning.

It may be noted that the costs of transporting the system to other schools may be expected to be a small fraction of the costs of development and installation, as described in this report. This is because the many things required for system operation will have been developed, as described in the previous Subsection B. Copying them, identifying them, or adapting them in minor ways to fit particular school circumstances are not considered to be activities requiring substantial funds.

D. Future Installation Phase (July 1974 to July 1975 or 1976)

Activities of the development team during this phase may be summarized as follows:

(1) Revision and further adaptation of curriculum materials, record forms, and procedures, based upon experience with their use during the previous phase.

(2) Development of computer-based systems for handling (a) records of student achievement and progress; (b) costs and budgeting of school operations; and (c) records of teacher performance and accomplishment to be used as a basis for personnel management and the salary increment system.

(3) Conducting system evaluation, in accordance with a design formulated in the previous phase. This involves collection and collation of data, analysis, and interpretation of the findings. Reports should be made to (a) the principal and staff of the school, (b) the County superintendent and his staff, and (c) the parents and larger community. Other reports may be prepared for professional R & D audiences, intended for publication in specialized journals.

(4) Completing the description of the system for transportability to other schools (see Subsection C).

V. Actions Required of the Principal

In this section the special kinds of actions required of the principal during the transition to the new individualized program of instruction are described. The principal must work closely with the County or District school personnel in maintaining the administrative framework for the program. He must see that parents and the community are well informed about the school activities, that arrangements are made for in-service training and workshops for teachers, and that the development team is able to obtain logistic support and inputs from the staff.

A. Preparation Phase (1 November 1971 to 1 July 1972).

During this phase the unique actions required of the principal deal with financial management, contacts with parents, and personnel management.

1. Financial Management. Early in this phase the principal will need to plan and make arrangements for the costs to be incurred in conducting in-service training of teachers during this period. The principal must work cooperatively with County and District offices in preparing the grant proposal for support of development and installation of the system. Orders must be placed for materials required for installation of IMS math and Criterion Reading during the 1972-73 school year.

2. Parent-Community Relations. It is the principal's responsibility to see that a close relationship is established between the school and the community, and especially between the school and the parents, by: (a) informing parents about the operation of the school and its objectives, particularly with regard to individualized instruction; (b) keeping parents informed about the progress of their children; (c) arranging for parental support and participation in a survey of opinion about school goals (see Report No. 3, August 31, 1971, pp. 25-34); and (d) encouraging frequent discussions among parents and teachers.

The principal should see that there are numerous opportunities for parents to receive information about the goals of the school and to discuss the rationale for optimizing education through individualized instruction. The principal would probably arrange meetings at the school; other modes of presentation, such as neighborhood meetings or newsletters, may be considered.

3. Personnel management.

a. Review of staffing. A review needs to be undertaken of the school staffing, based upon information gained from interviews with teachers. Discussion of staffing should be initiated with District officers, and recommendations made for any changes or additions required. The aim of such actions

is to insure, insofar as possible, the presence of a staff willing and enthusiastic in working towards the goals of a new system.

b. Staff development. Arrangements need to be made for inservice education which will provide teachers with competencies in techniques of contingency management and knowledge of procedures for instruction in an individualized program. The specific skills to be acquired are described in Section VI, Actions Required of Teachers. The principal must schedule the necessary consultants for the in-service training meetings, and arrange for the necessary equipment and materials which may be needed, such as video-tapes, video-taping equipment, resource books, etc. Insofar as possible, the principal should participate in the staff education along with the teachers. School personnel other than teachers should also be encouraged to participate in the training during this phase. The custodians, dietitians, and secretaries have important responsibilities within the system, and they can more fully facilitate the smoothness of the operation of the system if they understand the techniques and procedures being used.

c. Planning for staff training during the summer period. The principal must supervise preparation for the summer workshop which is part of the subsequent phase with advice from the development team. Arrangements need to be made for the principal and two teachers to attend an IMS Math workshop conducted by the Center for Individualized Instructional Systems, 813 Ellis Road, Durham, North Carolina, prior to the summer workshop. Details of the workshop need to be planned to enable teachers to become familiar with operations of the IMS Math and Criterion Reading systems. Procedures for installing these two systems in the classrooms need to be included in the training plan.

d. Planning building divisions. Plans need to be made for the phyiscal arrangement of the "Little Schools" for the following year, if this is not currently part of the school's organization (see Section II, A. Assumptions). Each "Little School" will consist of a cluster of seven classrooms with children from grades K-6. During the Development and Staff Training Phase of the program, each classroom may contain a single grade, if this has been the previous practice. However, mixed grade assignments to ungraded homerooms is the projected arrangement when the total system is installed.

B. Development and Staff Training Phase (1 July 1972 to 15 August 1973).

During this phase the principal obtains and implements suggestions from the development team in determining revised methods of financial management, in providing for increased school-community communications, and in establishing new channels of communications within the school designed to facilitate the tryout of individualized instruction in IMS Math and Criterion Reading.

1. Financial management.

a. Developing a budget system. A suggested process for development of a cost model incorporating a listing of all major cost subcategories for the new system has been outlined in Report No. 3, August 31, 1971, pp. 35-47. With the aid of specialist members of the development team, and in concert with District officers, the principal determines the cost entries in the budgetary system, the form of budget requests, allowable flexibility in fund allocations, and designs methods of internal accounting which correspond with these requirements.

b. Planning and arranging summer workshops. The principal, with the help of the development team, will plan the content of a summer workshop beginning the Development-Staff Training Phase, emphasizing training in techniques of using IMS Math and Criterion Reading materials. Funds need to be requested and arrangements for consultants made for this period of staff education. A second workshop is to be planned and arranged for the end of the phase, preceding the Installation Phase, with the aim of training teachers in procedures applicable to the total system. (See Section VI, Actions Required of Teachers, 2. Development and Staff Training Phase).

c. Ordering materials. As selected and adapted by the development team, curriculum materials need to be ordered for all areas of instruction during the Installation Phase of the program.

2. Personnel management.

a. Channels of communication. The principal must arrange for both formal and informal lines of communication. The School Coordinating Council provides for communication among parents, community, and school. Within the school the principal will establish weekly meetings of teachers within each Little School. These meetings provide an atmosphere of open communication among teachers, the exchange of ideas, and the development of mutual cooperation in improving the learning environment. One or more special teachers would attend each of these meetings on a rotating basis so that the homeroom teachers in each Little School have the opportunity to pursue concerns about activities in art, music, physical education, etc. These meetings are particularly important for facilitation of the installation and tryout of IMS Math and Criterion Reading during this phase. The principal also arranges monthly meetings for faculty at each of three grade levels, Kindergarten, Primary, and Intermediate, for discussion of common problems and exchange of information.

The principal encourages informal communications through arrangements for staff coffee rooms, staff lunches, and by encouraging interaction between appropriate staff members when they can provide assistance to each other in

particular problems. On occasion, the principal calls meetings of the entire faculty for discussion of school policies and problems.

3. Preparation for installation. A number of activities are undertaken by the principal during this phase which prepare for the installation of the total system during the following school year. Generally, these various actions arise out of plans and procedures emanating from the development team. The principal should serve as a member of this team on appropriate occasions, discussing the feasibility of actions suggested, and determining how to implement them.

a. Assignment of pupils. In the spring of this school year, as well as in subsequent years, the principal will assign students to homerooms for the following school year. Each homeroom, except at the kindergarten level, is to contain children from three age groups, corresponding to grades 1, 2, and 3 in the primary section, 4, 5 and 6 in the intermediate. (See Section II, Description of the System). Children should not be assigned on the basis of their academic ability. Other factors, such as proportional distribution of boys and girls, may be taken into account to achieve balance and representativeness.

4. Parent and community relations. Several kinds of actions by the principal follow from the activities of the development team in this area of effort.

a. School-community survey. Arrangements are made by the principal for the administration of a parent questionnaire on the goals and functions of the school. Following this, meetings are held to obtain parent and teacher suggestions regarding the contents of a School-Community survey to be constructed by the development team. After the survey has been developed, the principal schedules the conduct of the survey. Later, he arranges meetings for reporting the results to the community, to the School District staff, and to the school staff.

b. Establishing a Coordinating Council. The principal organizes a Coordinating Council, whose purpose is to review the progress of all phases of the program, to facilitate communication between the school and the community, to suggest changes in the program and its operations, and to recommend to the principal educational programs for parents, methods for informing parents of school activities, and programs for using community resources by the school (see Section II, School-Community Relationships). The Coordinating Council is composed of one teacher and one parent representative from each "Little School," one representative from the District or County office, and the principal. The recommendations of this Council, after consideration of the results of the School-Community survey, may include an educational

program for adults, publication of a newsletter, arrangements for volunteer workers in the school, the assignment of parents or other community personnel to committees participating in program development.

C. Initial Installation Phase (15 August 1973 to 15 June 1974).

During this phase of the program, the principal's primary function is to monitor the progress of the program, to take a variety of corrective actions with the aim of removing obstacles and insuring continued successful operation. Special attention needs to be devoted by the principal to (a) maintaining communication networks within the school; (b) continuing to communicate with parents and the larger community; (c) additional consultation with the development team pertaining to revisions and refinements of instructional procedures; and (d) participation in the effort of the development team to devise and institute comprehensive evaluation procedures.

1. Monitoring the program. The principal continues to monitor the operation and progress of the program through staff meetings, independent observations, and unscheduled conversations and interviews with staff members.

2. Communication with parents and community members. The promotion and support of parental and community involvement in the program is continued through interactions with members of the Coordinating Council, conduct of adult information and education programs, scheduling of interviews and meetings with parents, and individual contacts with people in the community.

3. Financial and personnel management. The newly developed procedures for budgeting and internal accounting are tried out, and recommendations made for revisions. In implementing procedures for awarding yearly pay increases to teachers, the principal provides individual teachers with counseling directed toward the aim of continually improving their performance in the learning support and student achievement areas.

4. Consulting with the development team. The principal becomes the main channel through which suggestions for refining and improving instructional procedures are funneled to the development team. In addition, he serves as a consultant to this team in their efforts to develop a workable comprehensive scheme for evaluation of the total program, including its cost-effectiveness.

D. Future Installation Phase (July 1974 to July 1975 or 1976).

Generally speaking, the activities of the principal undergo no major change during this period. Efforts to improve the operation of the program,

and the relations of the school with parents and community, are continued. The more or less informal monitoring of program operation changes gradually to an increasing participation in the formal evaluation procedures designed by the development team. Otherwise, the principal's actions more and more reflect a return to the customary role of financial and personnel manager. The rewards of the job, in a school which is demonstrating markedly increased educational effectiveness, are expected to be greatly enhanced.

VI. Actions Required of Teachers

In this section, we undertake to describe the many kinds of actions and decisions that teachers need to make in order to prosecute the development and installation of an individualized program of instruction, including the elements of student participation and parental involvement. Teacher activities begin with a heavy emphasis on inservice education during the preparation phase, proceed to intensive training on particular programs, coupled with some specific developmental activities during the development-training phase, and then to actual installation. As indicated in the previous section, these necessary teacher activities are all oriented toward installation of the program and its specific procedures by an entire teaching staff, and are additional to developmental activities carried out by a development team.

A. Preparation Phase (November 1, 1971 to July 1, 1972).

During this phase of the program, arrangements for staff education need to have the aim of permitting teachers to become proficient in two areas. These are (1) techniques of contingency management; and (2) procedures for instruction in individualized programs (such as IMS Math, Criterion Reading). It is difficult to say, for the individual teacher, how many of the skills required in these areas will be previously known or even frequently employed. However, at least some of them must be newly learned, and perhaps many, for most teachers.

1. Contingency management. Techniques of contingency management are of fundamental importance to the learning process, and essential to the establishment of a successful system of individualized instruction. When used properly, they aid in the accomplishment of three objectives which form a part of successful instruction:

(a) Establishing and maintaining orderly student behavior, freeing the classroom from disruption and distraction, and aiming students toward productive learning activities.

(b) Managing learning so as to instill in students a positive liking for learning and for the accomplishments to which it leads.

(c) Capturing the interest of students in desirable problem-solving activities ("generalizing activities") as sources of satisfaction for mastery of the intellectual skills involved in these activities.

a. Management of classroom behavior. In general, the teacher needs to learn to identify differences in the interests, likes and dislikes of individual students, and to employ these in selecting specific contingencies to achieve a task-oriented learning environment. Specific objectives to be achieved are:

(1) Stating classroom rules in a positive manner. Example, "Walk in the hallway," not "Don't run in the hallway."

(2) Praising appropriate behavior. Positive statements ("I like the way Kathy is lining up for lunch") should be used at frequent intervals and approximately 80% of the time. Other evidences of approval should be used, including facial expressions, touching the child, permitting the use of desired objects.

(3) Attending to and responding to instances of appropriate behavior. The teacher needs to reinforce desirable behaviors which may occur naturally in the classroom. (Example: "These children finished their assignments on time; they will be helpers today.")

(4) Ignoring and withholding approval for inappropriate behaviors, in order to extinguish them. (Example: A pupil question which is "out of line" is ignored).

(5) Using direct disapproval only for some behaviors, particularly those which may bring injury to other people.

(6) Applying reinforcement as immediately as possible. Use of approval or disapproval should be made without delay or hesitation.

(7) Identifying and selecting a variety of reinforcing activities appropriate to children's interests. The teacher may find it desirable to keep a record of reinforcing events for particular children, and to arrange for variations in them.

b. The management of learning. The following are specific objectives in this area:

(1) Progressing from concrete rewards to social incentives. Initially, reinforcement may take the form of an activity involving concrete objects (such as a desired toy or game). The teacher should arrange reinforcement so that the child is gradually "weaned" to accept social and remote reinforcements.

(2) Substituting token reinforcements for immediate activities. Symbols gradually come to stand for reinforcements to be gained in the future.

(3) Using schedules of reinforcement which increase the time span for learning activities, and reduce the frequency of reinforcing acts.

(4) Using reinforcement consistently, and with fairness to every pupil. The use of positive reinforcement (with the aim of 80% frequency).

(5) Developing methods of recording changes in pupils' behavior through a series of time samples. Teacher colleagues can be asked to record proportions of positive and negative reinforcement used.

c. Employing generalizing activities as reinforcers. It is expected that contingency management techniques will be employed in part to "weld together" the basic skills and the generalizing components of the curriculum. This means that the latter activities are to be used as reinforcers contingent upon the mastery of basic skills. In preparation for the installation of this system, the following objectives for teacher learning are appropriate to this phase:

(1) Identifying possible generalizing activities in science, social studies, art, music (or other fields), which can serve as reinforcers to follow mastery of basic skills in language, reading, and mathematics.

(2) Identifying and trying out procedures associated with materials scheduled for installation in basic skills areas (Instructional Concepts Program, IMS Math, Criterion Reading) which are used to provide reinforcement for success and mastery of skills, including checking of pupil productions, feedback, assignment choices, etc.

(3) Designing sample sequences of activities applicable to the pupil's school day, incorporating basic skills and generalizing activities in combinations which demonstrate contingency management principles.

d. Resources for training in contingency management. Resources for training in this area need to be sought from (1) teams available within the School District; (2) outside consultants skilled in techniques of contingency management; and (3) books or other media which can be studied by teachers. Among the latter might be included:

i. Becker, W. C. Parents are teachers: A child management program. Champaign, Illinois: Research Press, 1971.

ii. Buckley, N. K. & Walker, H. M. Modifying classroom behavior: A manual of procedures for classroom teachers. Champaign, Illinois: Research Press, 1970.

iii. Diebert, A. N. & Harmon, A. J. New tools for changing behavior. Champaign, Illinois: Research Press, 1970.

iv. Homme, L., Czanyi, A. P., Gonzales, M. A., & Rechs, J. R. How to use contingency contracting in the classroom. Champaign, Illinois: Research Press, 1969.

v. MacDonald, W. S. Battle in the classroom: Innovations in classroom techniques. Scranton, Pennsylvania: International Textbook Co., 1971.

vi. Madsen, C. H., Jr. & Madsen, C. K. Teaching/discipline: Behavioral principles toward a positive approach. Boston: Allyn and Bacon, 1970.

vii. Madsen, C. H., Jr. & Madsen, C. K. Teaching/discipline: Behavioral principles toward a positive approach (Training manual for inservice workshops). Boston: Allyn and Bacon (In press).

viii. Popham, W. J. Discipline in the classroom. Filmstrip-tape program No. 15, Vimcet Associates, P. O. Box 2417, Los Angeles, California 90024.

2. Individualized instruction procedures. Areas of training related to individualized instruction which need to be undertaken during the preparation phase include study of (a) the role of the teacher; (b) the role of the student; (c) systems of learning management; and (d) diagnosis and lesson assignment.

a. The role of the teacher. Training should identify the major role of the teacher as a manager of learning activities for the individual child, as opposed to being solely a dispenser of knowledge. The duties of the teacher in the learning management role include assessing what each individual pupil knows and does not know, becoming aware of the individual student's strengths, weaknesses, preferences, and interests, setting reasonable individual learning objectives, and evaluating individual achievement and progress. The teacher as a manager must become well acquainted with a broad range of available instructional materials and other resources in all areas of the elementary curriculum. She needs to be able to discuss future plans, assignments, and progress of each student with the student and his parents. Guiding the student in intellectual and social development by encouraging appropriate choices of activities is also an important set of duties. The teacher also assumes supervisory duties with reference to aides and to student tutors.

b. The role of the student. During this phase, teachers need to learn about the typical performances exhibited by students who participate in individualized instruction, and who assume roles of tutors or project leaders. Perhaps the best medium, other than direct observation, would be films and televised programs which illustrate typical performances in schools which have employed these methods. The various roles to be exhibited include the student as an individual responsible for locating and caring for instructional materials, undertaking independent learning activities, participating in small groups having common instructional aims, working in pairs or groups on science or social studies projects, testing his own proficiency, keeping records of his progress in achieving objectives. In addition, the student's role as a tutor needs to be thoroughly understood, along with the requirements for tutor training.

c. Learning management systems. Staff education should include instruction on the concept of delivery systems for learning, as distinguished from the concept of content materials. Teachers will need to identify the components of learning delivery systems and their functions, including those of presentation, learning guidance, feedback, assessment of outcomes, and retention and transfer of learning. Efforts may be made to describe typical lessons familiar to each teacher in terms of these components. In addition, identification of procedures employed by certain specific courses of individualized instruction, such as IMS Mathematics and Criterion Reading, should be undertaken.

d. Diagnosis and assignment. Teachers need to learn procedures involved in diagnosing student learning difficulties, as incorporated in such programs as IMS Math and Criterion Reading. Such learning might begin with reading the User's Guides for these programs and then trying them out with one or more students. For example, a teacher might decide to identify a student who is having trouble with "addition of mixed numbers," and proceed to follow IMS procedures in overcoming this difficulty. In a similar manner, the procedures involved in making initial and progressive assignments might first be studied by reading the User's Guides, and then trying out the procedures described, with either IMS Math, Criterion Reading, or both.

e. Resources for training. In general, training in specific procedures of individualized instruction may best be attained by studying the particular programs that are scheduled for installation, trying the procedures with students, and discussing the results of the trial with teacher colleagues. To introduce the programs, teachers or supervisors acquainted with their use may be employed as consultants or discussion leaders. For a more general introduction preceding work with specific individualized programs, a series of film strip cassette tape units prepared by Jack Edling is recommended. This slide and audio tape set is available from the Department of Audio-Visual Instruction, National Education Association, 1201 16th Street, N. W., Washington, D. C. 20036.

3. Participation in study of organizational climate. Teachers participate in a study of the organizational climate of the school, by responding to a questionnaire dealing with personal interactions, conducted for the purpose of obtaining background planning information. (See Section IV, A 6, and Appendix C).

B. Development and Staff Training Phase (July 1, 1971 - August 15, 1973)

During this phase school personnel prepare for the initial installation of the entire system. The developmental efforts which are the responsibility of the development team are described in Section IV. The actions required of the teachers fall into three categories--(1) During the summer which begins this

phase, they become familiar with operations of the IMS Math and Criterion Reading systems, and plan procedures for installing these two systems in the classroom. (2) During the academic year the teachers implement these two systems, use the related forms, and start a tutoring program. (3) During the following summer, preceding the Installation Phase, the procedures and forms related to IMS Math and Criterion Reading, and the tutoring program, are reexamined and revised on the basis of the year's work, and procedures are developed for implementing the total system.

1. Summer Workshop, 1972. During the summer of 1972, the teachers attend a workshop in which they become familiar with materials and procedures for individualizing math and reading instruction during the subsequent academic year. In addition, the teachers plan procedures for installing these systems (IMS Math and Criterion Reading) in their own classrooms. Details of procedures to be practiced are included in the following two sections.

2. IMS Math.

a. Inservice training. During the first summer of the phase, two teachers and the principal attend a training workshop conducted by the Center for Individualized Instructional Systems, 813 Ellis Road, Durham, North Carolina. This workshop covers individualization and its implications for education, and provides opportunities to examine materials and practice procedures necessary for implementing IMS. The two teachers, with some assistance from the principal, then take responsibility for conducting a local workshop for all teachers in the school, and for providing assistance throughout the year. All teachers read and study the Users' Guides provided by the publisher. They plan the details for introduction of IMS to their classes, for classroom procedures, and for arrangement of materials in the classroom.

b. Assessment. During the academic year the teacher is required to administer placement tests, unit pretests, and unit posttests. The placement tests are used to identify the units in the program where the individual should start work. The pretests are used to determine which skills in a unit the student has previously mastered. The posttests are for checking the mastery of all skills in the unit and the transfer and synthesis of skills.

c. Conducting instruction. The teacher daily checks the progress and makes assignments for each student. Records of progress are recorded on the IMS Record Card, and assignments are made on the Prescription Sheet (see Section IV, Forms and Reports). The teacher must train students to locate and return materials to their proper places, to administer and score their own check-up tests, and to follow established classroom procedures. During the day the teacher monitors the students' work and provides assistance where necessary.

d. Reviewing and revising procedures. At the end of the first year's experience the teachers discuss their procedures, and each teacher revises plans for classroom procedures as necessary.

3. Criterion Reading. During the summer beginning this phase, all teachers, including reading specialists, special education teachers and the principal should become familiar with the horizontal and vertical hierarchy of skills in the system, should identify and organize materials, and prepare detailed plans for installation of the system.

a. Preparing materials. Criterion Reading is a system for managing reading instruction, but does not contain the instructional materials themselves. The publisher, Random House, has completed a set of "Correlations" which provides a cross-index of Criterion Reading skills with other Random House materials (to be available in November, 1971), and is in the process of compiling "Correlations" with material by 14-15 publishers and programs (to be available early in 1972). However, the teachers must organize all available materials. A folder of student materials should be compiled for each process and each outcome skill. This requires the dismantling of workbooks and referencing of pages in texts. Since students will go to these folders to locate work material, each folder should be color-coded for level and perhaps also for skill area. For example, all Level 2 folders might be blue, but the shade of blue could vary from very light for phonology skills to very dark for comprehension skills. Each folder and each worksheet in the folder might also be identified by skill number and skill identification, such as Phonology· 36-14.2 Identifying Temporal Prepositions.

A Criterion Reading Resource Notebook should be compiled in a loose-leaf form. For each process and each outcome skill there should be one assignment sheet and one copy of each available worksheet. The assignment sheet contains a statement of the performance objective for the skill and a list of all worksheets and other resources related to the skill. This resource notebook is to be used in making assignments.

Teachers should either see that sufficient duplicates of all worksheets are available or should have these laminated for use with a grease pencil. Answer keys in a form usable by students need to be made. Resources other than worksheets should be distributed a few copies to each classroom. If there are insufficient resources for any skills, this matter should be referred to the development team.

b. Assessment. The teachers need to plan the details for initial assessment of all students. It is recommended that assessment begin with phonology skills, two or three 20-minute assessment periods being scheduled each day. Once a student's level of competence in phonology is determined, assignments

may be made accordingly and other assessments may be interspersed until the student's level of mastery has been determined in all five areas.

c. Conducting instruction. Daily the teacher checks the progress and makes assignments for each student. Records of progress are recorded on the Criterion Reading Record Card and assignments are made on the Criterion Reading Assignment Sheet corresponding to the skill to be learned. The teacher must train the students to locate and return materials to their proper places; to check their own worksheets, and to follow established classroom procedures.

The teachers also plan for reading as a generalizing activity. This requires insuring that numerous texts of various texts of various levels are available in each classroom. Plans should be made for silent reading and for oral reading between students in pairs.

d. Reviewing and revising procedures. After the first year of using the Criterion Reading system the teachers need to reexamine the resource files and their procedures, making whatever changes seem necessary for an efficient operation.

4. Tutoring program. Before students serve as tutors they should be trained in those competencies which facilitate effective tutoring. The teachers assist the development team in determining the tutor training program to be used. A program may be adopted or modified, or the development team may need to develop one.

a. Specifying competencies for tutors. Teachers need to learn about and decide upon the competencies desirable in student tutors. The behaviors necessary include the following:

(1) Verbally confirming correct pupil responses.

(2) Using positive reinforcement by praising the student for correct responses.

(3) Showing or telling the student the correct response when he is incorrect.

(4) After displaying the behavior described in (3), eliciting the correct response by using questions before continuing.

(5) Repeating the question using different words if the student does not make a response.

(6) Avoiding attempts to elicit correct responses by prompting.

(7) Avoiding negative verbal behavior when a student fails to respond correctly.

Two programs available which should be seriously considered are the Tutor Training Program developed by the Southwest Regional Laboratory, and the Tutor Training Module distributed by the Florida State Department of Education (see Report No. 2, p. 75).

b. Training and monitoring of tutors. The teachers determine a mutually satisfactory set of procedures for gradually training a pool of tutors for use in conjunction with IMS and Criterion Reading. The training would probably commence about the middle of the year when the teachers and students have become accustomed to the IMS and Criterion Reading procedures.

The teachers determine simple procedures for monitoring tutors in order to insure that the established tutor behaviors are continued, and that the tutors are aware of the teacher's approval and appreciation of their efforts. Each teacher also establishes classroom procedures for the assignment of tutors which insure that the latter have attained prior mastery of skills.

5. Contingency management. The teachers continue to participate in the in-service training program in behavior management with emphasis on improving competencies related to contingency management of academic learning. The precise actions required of the teachers depend upon the in-service program which is to be developed.

6. Interactions among the staff, and with the development team. Each week the teachers meet to discuss the implementing of IMS Math, Criterion Reading, and the tutoring program. Through this exchange of ideas the teachers can gain support from each other and provide constructive suggestions. At frequent intervals, progress of the development team should be reported to the teaching staff, and suggestions from the teaching staff are reported to the development team.

7. Workshop on Implementing the System. During the summer following the school year in which IMS Math and Criterion Reading are tried out, the teachers will attend a workshop preparing them for installation of the total system. Three major topics of the workshop are:

(a) Review of contingency management techniques

(b) Information about the operation of the total system

(c) Practice in specific procedures needed to operate the total system.

Instruction in the first two topics of the workshop are conducted on an individualized basis similar to that planned for the elementary school. Through the use of diagnostic assessments each teacher is given individual assignments and will select reinforcement activities (such as coffee breaks) contingent upon completion of assignments.

Practice on specific skills involves micro-teaching with children who attend a summer school during the mornings. In the afternoons, teachers view their own video-tapes and appraise their own performance in accordance with established criteria. The teachers, working in pairs, are thus able to determine which skills and procedures they need to practice. Throughout the workshop the teachers receive appropriate praise and encouragement from the principal and other workshop leaders.

Materails required for the workshop are developed or selected by the development team, with the help of a committee of teachers.

C. Initial Installation (15 August 1973 to 15 July 1974)

During this phase the entire system is installed, and accordingly many actions are required of teachers. Some of these actions pertain to the management of individualized instruction, while others involve interactions with other teachers, with parents, and with the development team.

1. Daily management of individualized instruction. During a typical day the teacher supervises the actions of an aide, conducts planning sessions with individual children, assists children in daily routines, supervises on generalizing area, and reviews individual student progress.

a. Supervising the aide. Before the school day begins, the teacher and the aide meet to discuss the plans for the day. There may be specific problems with individual children for which the teacher and aide need to make specific plans (see Report No. 2, August 31, 1971, p. 69). The responsibilities of the aide may be reviewed and the room checked to see that materials needed that day are ready. The responsibilities of the aide may be reviewed and the room checked to see that materials needed that day are ready. The aide may be asked to handle problems which arise in the operation of mechanical and electronic equipment, to supervise the location of worksheets, and to answer questions related to instructions and procedures. The aide may also be asked to handle small groups in specific learning tasks. It is also likely that the aide will collect lunch money and check attendance as the children arrive.

b. conducting planning sessions. Since the teacher is to have an individual conference with each child each week, she probably schedules about six each day. As the children start to work, the teacher observes their actions and goes to any child who places his flag (a folded piece of construction paper) on his desk to signal that he needs assistance. Then, as events come under control, and the aide is able to handle routine questions, the teacher starts conducting planning sessions.

(1) Making decisions. During this session the teacher and student agree upon the student's activities for the week. The progress of the child in basic

skills is examined, the activities in the foundational skills are assigned, the generalizing activities are selected (with alternates), and the contingencies for the generalizing activities are agreed upon. During the week, the general plan is reviewed daily by the teacher and modified as necessary.

The teacher is to see that each child assumes as much responsibility as possible in order that he become proficient in managing his own learning. At first the teacher plays the predominate role in these decisions. However, the teacher must explain her decisions to the student and guide the student in assuming additional responsibility. During the time in which the teacher assumes the role of an instructional counselor, she might make these explanations to the student:

> "You are having some difficulty in learning to add these two-digit numbers. I think worksheet A-3 might help you and I will find a tutor to work with you."

> "I think you have done very well. Tell me about how you did on these last three worksheets. . . . Yes, I think you have learned to do this. Would you like to take the assessment and show me how well you can do? Then you have only one more skill to learn in this unit. I believe you can learn that this week, too."

As the children become familiar with the routine and are encouraged to examine their own achievements, some children will be challenging themselves in regard to how many skills they can learn during a week's period. They may also be generating sound ideas for generalizing activities. For children who can assume a greater role in planning their own learning, the teacher might make statements such as these:

> "Now that you have taken the pretest for this unit in math, can you tell me which skills you need to study? . . . How much do you think you can learn this week?"

> "That would be a good question to explore further [for a generalizing activity]. How would you investigate that question? . . . An outline of the steps you'll follow could be your composition assignment today. Then if you have described each step clearly, maybe someone else would like to work with you on the project later in the week."

(2) Aids to decision-making. The teacher and student have various records available to assist them in making decisions during the planning session. The student has his folder which includes the assignments made during the past week with a record of performance on tasks completed. The teacher has the Student Record Card showing the skills mastered in each of the foundational areas, and notebooks cataloging the resources available for student

learning. These facilitate the decisions for making assignments in particular skills. In addition, the teacher has a list of generalizing activities which are applicable for the student, keyed to basic skills which the student has mastered.

(3) Scheduling the contingencies. At first the teacher may need to allow frequent participation in generalizing activities for short periods of time, but gradually the students will be able to accumulate points which can be exchanged for longer periods of time in generalizing activities. Eventually the points would be unnecessary, and the students would simply work longer in basic skills before participating in generalizing activities.

(4) Individualizing the planning session. The way in which the teacher conducts the individual planning sessions depends greatly upon the student--not only on his academic progress, but also on his personal style. The teacher may spend some time encouraging the shy child to verbalize his own successes, while for another child she may probe gently for indications of areas of interest. As decisions are made, the assignments are written on the appropriate assignment sheets.

c. Assisting children in daily routines. Throughout the day the teacher must be cognizant of the scheduled group activities. One child may be designated as the one responsible for tapping the others on the shoulder when it is time for some of the group to go to P. E. or when the teacher is ready to conduct a small group oral language session. The teacher also monitors the planned contingencies by having children display their flags when they have accomplished the designated task, in order that she may check to see that they are ready to undertake some type of generalizing activity. The teacher will make assignments for the children who are to take responsibilities in opening or closing assemblies, in classroom housekeeping duties, and in procedures for indicating their location when they leave the room.

d. Supervising one generalizing area. During the Development Phase the procedures for student activities in the generalizing area will be specified by the development team. Each teacher has the responsibility of supervising the generalizing activities which have been designated for her room. The teacher's guidance may be needed in procedural matters related to the task, and also in assisting the children in their efforts to work cooperatively together. The teacher may also conduct large group discussions during which various issues are dealt with and possibilities for further investigation are generated by the children. Future projects in this generalizing area may be derived from these questions raised by the children themselves.

e. Reviewing individual progress. During the day, or after the children have left, the teacher must examine each student's folder to review his progress in assigned tasks. The teacher may revise assignments or make notes to the student. This process also enables the teacher to plan for the following

day by noting generalizing activities which will be occurring and common needs of several children, for which a small group session might be conducted by the teacher or the aide.

2. Interactions with parents, teachers, and the development team. During this phase each teacher cooperates with other personnel in order to insure the smooth operation of the total system.

a. Communicating with parents. Twice yearly, each teacher conducts a conference with the parents of each student in her homeroom. During the conference the progress of the student is reported and the teacher obtains from the parents their support for the child's program. At the spring conference, the teacher plans with parents in terms of reasonableexpectations for the child during the subsequent school year. In addition to the two required conferences, parents or teachers may request additional sessions. The teacher makes periodic written reports to the parents, of a type to be developed during the Development and Training Phase (see Section IV B 3).

During all contacts with the parents, teachers must "accentuate the positive" while accurately describing the child's progress. Teachers should interpret the system to the parents, specify accomplishments of the student in academic and social behaviors, and be prepared to make positive suggestions for working together for the benefit of the child's education.

b. Supervising volunteers. If a program of volunteer workers has been established, it is the teacher's responsibility to supervise the tasks handled by any volunteers in her classroom. Each volunteer should have a precise task to perform and should receive supervised training in performing the task. The teacher should express her appreciation of the volunteer's work and the progress children make due to this extra assistance.

c. Communicating with other teachers. All teachers attend weekly meetings of their Little School, and monthly meetings with other teachers of the same grade-level, as described in Section II D. During this phase the grade-level meetings (primary and intermediate) are especially important, since the teachers may not have had experience working with such a wide range of ages and abilities. Special teachers (music, art, physical education, media center specialist, etc.) attend the weekly meetings on a rotating basis, in order to facilitate communication with the teachers about their respective areas.

d. Maintaining class records. From the Student Record Cards, teachers compile and maintain Class Records which indicate progress of the total group of children in the homerooms for which they are individually responsible. These records are submitted to the principal twice each year.

e. Administering tests. During the spring the teachers administer tests to measure yearly achievement, as directed by the principal (Section II E 1e).

f. Performing special tasks. Some teachers may have special duties. One teacher serves as coordinator for the activities of each Little School, and conducts weekly meetings of the Little School staff. One teacher from each Little School serves on the Coordinating Council (see Section II D); and some teachers may serve on review committees for the development team (Section IV C). In addition, individual teachers may be asked to explain the new program to community groups.

D. Future Installation (July 1974 to July 1975 or 1976).

During the following years of operation, the teachers (1) cooperate with the development team in refining procedures; (2) continue to develop expertise in managing individualized instruction; and (3) participate in evaluation procedures for assessing the success of the program's goals. The objectives of these activities are described in Section IV D. As time proceeds, it is expected that the system of instruction will come to be perceived increasingly by teachers as one which they can manipulate to achieve goals of student performance which they themselves define, subject to the general approval of the community.

VII. Actions Required of Parents

Parents are encouraged to take active roles in defining goals for the school program and in providing support for student learning. In carrying out these activities, parents participate both as individuals and as members of groups. In describing the actions required of parents, no assumptions are made concerning existing parent organizations, although some may be performed through such organizations.

A. Preparation Phase (November 1971 to July 1972)

During this phase parents are provided opportunities to participate in informational meetings and to express their opinions about the goals of the school.

1. Participation in meetings. Meetings are arranged during which the aims of the program are described and discussed, and through which parents are encouraged to support the program. Parent participation in such meetings is important to the operation of the system since the results of previous programs show that parent involvement and support has a beneficial effect on the success of the program. During these meetings parents are expected to become informed about the aims of the program and to contribute to the discussions of its procedures.

One parent from each Little School serves on a Coordinating Council (Section II, Description of the System, D.4) whose function is to review the program of the school and its progress in installing the new individualized system of instruction.

2. Responding to questionnaires. A preliminary survey of parental opinion is undertaken during this phase. Parents express their opinions related to the relative importance of various goals of an elementary education program by responding to the questions in the survey, and through interviews.

3. Observing School Board meetings. Parents are encouraged to participate not only in the meetings arranged by the local school but also to observe decision-making processes as they occur in school board meetings. Parents may determine their own system for insuring that one or more representatives attend such meetings.

B. Development and Staff Training Phase (1 July 1972 to 15 August 1973)

During this phase parents are asked to take a more active role in the school program through their participation in the development and conduct of a school-community survey, and through their participation on various committees.

1. Learning about the system. Early in this phase parents participate in meetings during which the IMS Math and the Criterion Reading systems are explained, and in which they have the opportunity to see the materials and to understand both how their children are taking more responsibility in classroom procedures and how teachers are making assignments to insure that each child masters basic skills. Parents receive information about the kinds of records kept by the teachers, the methods of reporting to the parents are discussed, and parents are advised of ways they can support learning at home.

2. Participation in school-community survey. Based upon information obtained from the survey conducted in the previous phase, the development team will be designing a comprehensive school-community survey to be conducted during this phase. Parents serve on a committee to draft a preliminary form of the survey. Either all parents or a representative sample of parents participate as respondents, and some parents are involved in subsequent activities resulting from the survey. The purposes of the survey include determining parental expectations and their desire to participate in the affairs of the school, exploring parental interests in participating in adult educational programs, and identifying the special talents or interests of members of the community which may contribute to the school program.

Results of the survey will make possible the planning of additional activities for the involvement of parents in the school program. At a minimum, these include: (1) appointment of interested parents to serve as members of the Coordinating Council; (2) conduct of parent information and education meetings; (3) involvement of parents and other members of the community as volunteers in selected portions of the instructional program. The possibility of the operation of a more extensive adult education program needs also to be further explored, as may be indicated by results of the community survey.

3. Serving on development team committees. In addition to the school-community survey committee, a few parents need to serve on other committees of the development team where parental involvement is especially pertinent, as in the development of report cards and procedures for teacher-parent conferences.

C. Initial Installation Phase (15 August 1973 to 15 June 1974)

The actions required of the parents during this phase involve continued monitoring of the operation of the total system, and various forms of participation in school activities.

1. Informational meetings. In order to support the school's program and to encourage their children's educational endeavors, parents should be well informed about the operation of the total school program. Since the operation is considerably different from that of the parents' own schooling, attendance at informational meetings, visits to the school as observers,

and conversations with school personnel are of great values. Those parents serving on the Coordinating Council help to determine appropriate methods for interpreting the system to other parents.

2. Learning how to support children's learning. Depending on the interest of groups of parents, educational classes may be organized to provide instruction for them in the principles of contingency management, and how these can be employed to encourage the learning activities of their own children, whether these have been initiated in the school or in the home. The principles are similar to those learned by the teachers, as described in Section VI, Actions Required of Teachers, A,1. Texts for such instruction are also referenced in that Section; of particular relevance is Parents are teachers: a child management program, by W. C. Becker. Sessions of instruction would likely be followed up by periodic interviews in the home, as a responsibility of the development team.

3. Participation in school activities. Parents may participate in classroom activities, and may become involved in extensions of the school program.

a. Volunteer workers. Parents may be asked to volunteer their services in performing tasks of instructional monitoring for the teachers, in distributing information about the system, in supervising certain generalizing projects for which they are specialists, or in hosting field trips for groups of students through their places of business.

b. Committee work. Some parents continue to serve on the Coordinating Council, and parents may be asked to serve on other committees related to the work of the development team or the Council.

D. Future Installation Phase (July 1974 to July 1975 or 1976)

Parents continue the activities described for the previous phase. They suggest to the development team the kinds of information which they desire as indicators of school effectiveness and parental satisfaction. Parents are involved as respondents in the efforts of the development team aimed at system evaluation.

APPENDIX A

Materials and Programs for Basic Skills

The descriptions included below have been derived from information made available by publishers.

Composition Skills

English Writing Patterns. Random House, Singer School Division, 201 E. 50th Street, New York, New York, 10022. This is a self-contained text-workbook series for grades 2-6, in which students learn to write through successful practice with English writing patterns. Instead of formal definitions of terms, definition is taught through examples, repeated exposure, and association. Oral work is used to reinforce the writing practice.

Language and How to Use It. Scott, Foresman and Company, Atlanta, Georgia, 30305. Texts, records and kits are included in these materials, designed to teach specific objectives in oral self-expression, writing, and listening skills to children K-8.

Organizing and Reporting Skills Kit (Grades 4-6). Sciences Research Associates, Inc., 259 E. Erie Street, Chicago, Illinois, 60611. This kit focuses on the basic elements of effective reporting, including the form of the report, sticking to the point, order in the paragraph, quality in the paragraph, notetaking and outlining, and making an outline. Arranged for individual pacing with mastery of each skill, the materials include study cards, skill cards, key cards, and teacher's handbook.

Spelling and Writing Patterns. Follett Educational Corporation, 1010 W. Washington Blvd., Chicago, Illinois, 60607. Materials for grades 1-6 are divided into units containing spelling words, identifying word patterning, and then activities such as sentence building, alphabetical ordering, and written expression. To facilitate individualized instruction each unit contains a test with a criterion set for satisfactory performance.

Kindergarten

Open Court Kindergarten Program. Open Court Publishing Company, LaSalle, Illinois, 61301. The aim of this carefully sequenced program is for all children to master certain basic skills. The general objectives include recognition and naming of letters and their most common sounds; counting objects, events and classes; measuring lengths and weights; labeling and describing environs; asking pertinent questions; giving instructions;

and performing specific perceptual and motor skills. Thinking skills are accomplished through graded tasks and special stories. Social skills are accomplished through recognizing and practicing positive kinds of behavior, and human feelings and relationships are brought out through discussion of literary classics. Learning is made visible and definite enough that the child can see day-to-day results.

Language Materials for Use with Criterion Reading

Listening Skills Program. Science Research Associates, Inc., 159 E. Erie Street, Chicago, Illinois 60611. Skills include auditory discrimination, recall, following directions, remembering sequence, and identifying main ideas and details, cause and effect, and mood.

Read On: Criterion Tests in Reading Skills. Random House, Singer School Division, 201 E. 50th Street, New York, N. Y., 10022. This audiotape program measures skills in visual discrimination, phoneme/grapheme correspondence, structural analysis, word recognition, and comprehension.

Skilpacers. Random House, Singer School Division, 201 E. 50th Street, New York, N. Y. 10022. There are six units, each containing self-directing, self-correcting skilpacer cards, written at varying difficulty levels for each of 15 reading skills.

Skilstarters. Random House, Singer School Division, 201 E. 50th Street, New York, N. Y. 10022. This is a series of classroom games for the pre-reader and the beginning reader in which children use specific readiness skills.

Wordpacers. Random House, Singer School Division, 201 E. 50th Street, New York, N. Y. 10022. This is a self-directing and self-correcting program for teaching specific skills necessary for vocabulary development.

Oral Language

Elaborative Language Series: Primary Set. Scott Education Division, Holyoke, Massachusetts 01040. This oral language program with a variety of media, is designed to help children with language deficiencies to progress from labeling to increasingly elaborate speaking and thinking.

Distar Language I. Science Research Associates, Inc., 159 E. Erie Street, Chicago, Illinois 60611. Using presentation books, storybooks, and "take home" materials, children learn the language of instruction through carefully sequenced lessons.

Language and How to Use It. Scott, Foresman and Company, Atlanta, Georgia 30305. See Composition Skills.

Peabody Language Development Kits, Levels P, 1, 2, and 3. American Guidance Service, Inc., Publishers' Building, Circle Pines, Minnesota 55014. Through a variety of materials and activities used in accordance with detailed lesson plans, children are to learn the receptive, associative, and expressive components of oral language.

Talk About It Series. McGraw-Hill Films, 330 W. 42nd Street, New York, N. Y. 10036. Through a series of film loops children learn to tell stories in sequence, build a storehouse of labels, and use language more skillfully.

Reading

Hoffman Information Systems. Hoffman Information Systems, 5623 Peck Road, Arcadia, California 91006. The Hoffman Information Systems is primarily a self-instructional set of multi-media materials for the elementary grade levels 1-6. The software consisting of filmstrips, tapes, and records are presented on the Hoffman Viewer in an integrated audio-visual program. Each child works independently at his own pace. The system includes language arts and reading materials and accompanying diagnostic tests for the same. The skills seem to be developed in a sequential manner. For example, the Level 1 Reading Program provides sequential instruction in phonics analysis, auditory discrimination, visual discrimination, visual motor training, language acquisition, concept development and sound symbol relationships. The available tests allow the teacher to place the student at the appropriate point in the program and to diagnose his progress periodically.

Reading Laboratory Series. Science Research Associates, Inc., 259 E. Erie Street, Chicago, Illinois 60611. The six kits, one each for grades 1-6, contain power builders with key cards for development of vocabulary, comprehension, and word attack skills; rate builders for development of reading speed and concentration; listening skill builders for development of ability to understand, retain, and analyze; and reading progress charts. The materials are designed for individualized work.

Reference Skills

Look Up and Learn. Random House, Singer School Division, 201 E. 50th Street, New York, N. Y. 10022. This dictionary activity book consists of varied exercises, games, and puzzles providing self-scoring practice in the full range of dictionary skills.

Study Skills for Information Retrieval. Allyn and Bacon, 470 Atlantic Avenue, Boston, Massachusetts, 02210. This workbook structured series provides systematic practice in the use of reference materials at the intermediate level. Exercises cover alphabetizing, use of various dictionaries, encyclopedias, magazines, atlases, almanacs, and the card catalog.

APPENDIX B

Materials and Programs for Generalizing Activities

The descriptions of materials and programs given below are derived from information obtained through publishers unless otherwise indicated. The ALERT system, developed by the Far West Laboratory for Research and Development, has provided useful information about a variety of programs Descriptions which are quoted from this file are so referenced.

Art

Teaching Art to the Young (Kettering Project). School of Education, Stanford University, Stanford, California 94305. The goal of this program in the visual arts is "to develop the child's understanding and enjoyment of the arts as well as his technical competence in producing art forms. . . . Syllabi presenting principles, objectives, rationale, and lesson plans are currently available. All instructional support materials, called "The Kettering Box," have been developed . . . . The seven units--painting, line, color, drawing, art history, graphics, and composition--can be presented in any order but lessons within units should be presented sequentially. In a lesson on color, the students are first introduced to the primary colors in a large painting. Next, each child is given a red, a yellow, and a blue transparent acetate square to hold up to the light, as a demonstration that orange, violet, and green are produced by color mixtures. Then each student mixes paint of primary colors to produce orange, violet and green. The principle, objectives, activities, and evaluation procedures are spelled out for the teacher in each lesson." (From ALERT, copyright by the Far West Laboratory)

Language Arts and Reading

Key Lab: Self-correcting Spelling Program. Houghton Mifflin Company, 666 Miami Circle, N. E., Atlanta, Georgia 30324. This supplementary program for grades 1-8, consists of jig-saw like puzzles, designed to stir pupils' motivation and to provide individual practice in sound to letter correspondences.

Matrix Games. Appleton-Century-Crofts, A Division of Meredith Corporation, 440 Park Avenue, S., New York, N. Y., 10016. Through sequenced games, preschoolers and first graders develop listening and verbalization skills as they follow complex directions, do critical thinking, solve problems, develop new vocabulary, give clear directions, and perform independently. These games provide excellent reinforcement materials for supplementing the language arts program.

Scholastic's Individualized Reading. Scholastic Book Services, 904 Sylvan Avenue, Englewood Cliffs, N. J. 07632. This sequenced program consists of five units for grade levels 2-6. Each unit consists of a teacher's guide; 100 different titled, paperback books; teacher's conference notebook, conference cards; reading inventory logs; master worksheets; bookcases; and a bulletin subscription. In addition, unit 2 contains 7" records of book readings, 10 skill games, phonics charts, and flannel board with cut-outs to develop oral language, creative storytelling, classification, and recognition of sequential development.

Sights and Sounds. Random House, Singer School Division, 201 E. 50th Street, New York, N. Y. 10022. This is a reading enrichment program for the primary grades containing taped presentations of stories which children listen to while following in a copy of the book which is being read.

Mathematics

Cross Number Puzzles. Science Research Associates, Inc., 259 E. Erie Street, Chicago, Illinois 60611. For grades 4-8 these four boxes provide motivating, self-correcting practice in whole numbers, fractions, decimals and percent, and story problems.

Equations. Science Research Associates, Inc., 259 E. Erie Street, Chicago, Illinois 60611. There are five different games appropriate for different age groups and ability levels, each designed to create stimulating and entertaining practice in mathematical operations, abstract thinking, and symbol manipulation.

Individualized Mathematics Drill Kit, AA. Random House, Singer School Division, 201 E. 50th Street, New York, N. Y. 10022. Suppes and Jerman have developed this kit specifically to individualize the teaching of mathematics in grade 3. The kit is structured so that each pupil is programmed automatically through a sequence of lessons, the difficulty of which is determined by the pupil's own performance.

Inquisitive Games. Science Research Assocites, Inc., 259 E. Erie Street, Chicago, Illinois 60611. There are two series of sequenced games (Exploring Numbers and Space and Discovering How to Learn) which lead to understandingsimportant to mathematics and development of problem solving skills.

Math Matrix Games. Appleton-Century-Crofts, A Division of the Meredith Corporation, 440 Park Avenue, S., New York, N. Y. 10016. These games in a controlled sequence develop skills of counting forward and backward, matching numerals with equivalent sets, order and sequence

comparisons, equivalents, mathematical qualifiers, and introductory addition and subtraction.

New Mathematics Application Kit. Science Research Associates, Inc., 259 E. Erie Street, Chicago, Illinois 60611. The Kit describes 270 experiments that require students to collect and manipulate data and to derive conclusions. Students work individually or in small teams in one of the problem areas: Science, Social Studies, Everyday Situations, Occupations, and Sports. Problem cards describe the experiment and guide students into collecting and sorting data. They can then apply whatever mathematical methods they can to find patterns or structure in the area.

Scholastic's Self-Teaching Arithmetic. Scholastic Book Services, 904 Sylvan Avenue, Englewood Cliffs, N. J. 07632. This is a supplementary action program for individualized instruction and study in grades 1-6. The Program, designed to help each child teach himself the basic facts and processes of number concepts and arithmetic principles, is a five book, six level series; a teacher's manual and a test packet are included.

Science

Concepts in Science. Harcourt, Brace and World, Inc., 757 Third Avenue, New York, N. Y. 10017. The basic ideas of science are organized into an integrated framework of conceptual schemes, each concept being presented in different degrees of complexity at different grade levels. For example, under the concept "A living thing is the product of its heredity and environment," the topic for level I is "Living things reproduce" and for level VI is "The characteristics of living things are laid down in a genetic code." The instructional materials consist of textbooks, teacher editions of texts, workbooks for Grades 4-9, packaged equipment for laboratory work for Grades 1-6, individual investigation cards, and tests for Grades 3-6. The laboratory cards consist of a set of 100 ungraded investigation cards, designed to provide background information, illustrations, and clues to procedures for pupils' independent investigations.

Discovering Science. Charles E. Merrill Publishing Company, 1300 Alum Creek Drive, Columbus, Ohio 43216. In this K-6 series each text contains experiments, observations and activities to help students find out what science is all about. Materials include teacher's editions, duplicating masters for an evaluation program, skill cards for individualized learning activities, and equipment kits.

Learnings in Science Laboratories. Science Research Associates, Inc., 259 E. Erie Street, Chicago, Illinois 60611. The four kits enable 4-6 graders to investigate the earth's atmosphere, weather and climate, the

solar system, and ecology (biogeography). For each major concept, home activities and classroom experiments are coordinated with research readings, written on five reading levels. At the end of each section the student completes the related section of the Student Record Book that concerns the Big Idea and checks his answers and predictions by using key cards.

Thinking Ahead in Science. American Book Company, 55 Fifth Avenue, New York, N. Y. 10003. This series for grades 1-6 deals with biology, earth science, space science, chemistry, physics, and astronomy. Each unit starts with an investigation and explanation, then experiment and observation to find facts, and then a factual review. The program includes basic texts, teacher's edition, six kits of experiments (4-6) and references of films, slides, filmstrips and books as supplementary material.

Social Studies

Man: A Course of Study. Curriculum Development Associates, 1211 Connecticut Avenue, N. W., Washington, D. C. 20036. "Man: A Course of Study is a one-year fifth-grade social science course designed for the study of 'man: his nature as a species, the forces that shaped and continue to shape his humanity.' The program is based on cultural anthropology and is presented through the use of sixteen films, thirty-two booklets designed for student use, filmstrips, records, and games. Students observe and discuss the biological and social structures, behaviors, and environments of salmon, herring gulls, baboons, and Netsilik Eskimos. As each new unit builds on earlier ones, students are challenged to compare and contrast what they have observed with their own cultural and physical environment. For example, one lesson on the Netsilik Eskimos is based on a brief film, 'Fishing at the Stone Weir.' The lesson plan calls for dividing the class into five groups before watching the film. Each group is asked to watch for one of the following: how the Netsilik are getting food, how they are caring for their young, what things men are doing, what things the woman is doing, and what things the boy is doing. After the film, students are asked to discuss the questions assigned each group, their feelings about the film, the meaning of the Eskimos' activities seen in the film, what parallels they see to their lives, etc. They may then make 'storyboards' to illustrate some of their ideas. The program is sold as a package costing $3200.00 for 5 teachers and 150 students. Per pupil cost can be reduced by using the package with a larger number of students." (From ALERT, copyright by The Far West Laboratory).

Map and Globe Skills Kit. Science Research Associates, Inc., 259 E. Erie Street, Chicago, Illinois, 60611. This kit is designed to help students (4-8) develop skills that are essential to effective use of maps and globes. By understanding the significance of facts shown on maps and globes, students are able to make inferences and draw conclusions.

Social Science Laboratory. Science Research Associates, Inc., 259 E. Erie Street, Chicago, Illinois 60611. Social Science Laboratory Units is a multi-leveled program that deals with the dynamics of human relations. The program, designed for grades 4-6, spans the fields of psychology and sociology with an established aim of exploring the cause and effects of human behavior. As a means of accomplishing the aim, the students listen to, read, and roleplay samples of behavioral interaction. They describe what happened and make value judgments. They examine the basis of their values. Unit One introduces pupils to the field of social sciences and the methods used in studying human behavior. Each of the six units that follow presents a related area of social psychology for this age group: friendly and unfriendly behavior; understanding people who are different; group dynamics; growing up; influence as social power; decision making by individuals and groups.

Sources for Simulation Games

Educational Simulations, Games and Drama Kits for Elementary Classrooms. (Simile II, P. O. Box 1023, LaJolla, California 92037). This brochure describes simulations, games, and drama kits which are available for the intermediate level. Included are: Powderhorn, in which children take the part of frontiersmen; Block'n score, a two-person strategy game involving a binary number system; Import, a simulation of the activities of six import firms located in various ports around the world; Explorers I, simulates exploring process; Explorers II; Homesteaders, farm life in 1870's and 80's; etc.

Appendix C

Organizational Climate

The Organizational Climate Description Questionnaire (OCDQ) was developed by Halpin and Croft to portray the organizational climate of elementary schools. Halpin[1] states that anyone who visits more than a few schools notes quickly how they differ from each other in their "feel." As each individual has a personality, so each organization has a climate.

The OCDQ consists of 69 items, each being assigned to one of eight subtests. Responses for each item range along a four-element key from (1) "Rarely Occurs" to (4) "Very Frequently Occurs." The eight subtests make up two sets of four variables describing the behavior of the group and the leader:

Characteristics of the Group

1. Disengagement
2. Hindrance
3. Esprit
4. Intimacy

Behavior of the Leader

1. Aloofness
2. Production Emphasis
3. Thrust
4. Consideration

From scores on the eight subtests, a profile is constructed. By analyzing the profile, the climate of that school can be estimated. Halpin and Croft have identified six organizational climates ranging on a continuum from open to closed.[1]

The Eight Dimensions of Organizational Climate

Teachers' Behavior

1. Disengagement refers to the teachers' tendency to be "not with it." This dimension describes a group which is "going through the motions," a group that is "not in gear" with respect to the task at hand. It corresponds to the more general concept of anomie as

1. Halpin, A. W. Theory and Research in Administration. New York: Macmillan, 1966.

first described by Durkheim. In short, this subtest focuses upon the teachers' behavior in a task-oriented situation.

2. Hindrance refers to the teachers' feeling that the principal burdens them with routine duties, committee demands, and other requirements which the teachers construe as unnecessary "busywork." The teachers perceive that the principal is hindering rather than facilitating their work.

3. Esprit refers to morale. The teachers feel that their social needs are being satisfied, and that they are, at the same time, enjoying a sense of accomplishment in their job.

4. Intimacy refers to the teachers' enjoyment of friendly social relations with each other. This dimension describes a social-needs satisfaction which is not necessarily associated with task-accomplishment.

Principal's Behavior

5. Aloofness refers to behavior by the principal which is characterized as formal and impersonal. He "goes by the book" and prefers to be guided by rules and policies rather than to deal with the teachers in an informal, face-to-face situation. His behavior, in brief, is universalistic rather than particularistic; nomothetic rather than idiosyncratic. To maintain this style, he keeps himself--at least, "emotionally"--at a distance from his staff.

6. Production Emphasis refers to behavior by the principal which is characterized by close supervision of the staff. He is highly directive and plays the role of a "straw boss." His communication tends to go in only one direction, and he is not sensitive to feedback from the staff.

7. Thrust refers to behavior by the principal which is characterized by his evident effort in trying to "move the organization." Thrust behavior is marked not by close supervision, but by the principal's attempt to motivate the teachers through the example which he personally sets. Apparently, because he does not ask the teachers to give of themselves any more than he willingly gives of himself, his behavior, though starkly task-oriented, is nonetheless viewed favorably by the teachers.

8. Consideration refers to behavior by the principal which is characterized by an inclination to treat the teachers "humanly," to try to do a little something extra for them in human terms.

The Organizational Climate Descriptive Questionnaire (Halpin & Croft)

The items in this questionnaire describe typical behaviors or conditions that occur within a school organization. Please indicate to what extent each of these descriptions characterize your school. Please do not evaluate the items in terms of "good" or "bad" behavior, but read each item carefully and respond in terms of how well the statement describes your school.

The descriptive scale on which to rate the items is printed at the top of the next page. Please read the instructions which describe how you should mark your answers.

The purpose of this questionnaire is to secure a description of the different ways in which teachers behave and of various conditions under which they must work. After you have answered the questionnaire I will examine the behaviors or conditions that have been described as typical by the majority of the teachers in your school, and I will construct from this description, a portrait of the Organizational Climate of your school. Please be assured that individual teacher responses are not identified and the code on your answer sheet is for the school's identification only.

General results of the study will be available upon completion.

ON THE ANSWER SHEET PROVIDED, MARK YOUR CHOICE OF THE ANSWERS GIVEN FOR EACH QUESTION

1. Grade Level You Teach:

   1) K-2 2) 3-4 3) 5-6 4) other

2. Your Age:

   1) under 25 2) 25-35 3) 36-50 4) over 50

3. Sex:

   1) Male 2) Female

4. Race:

   1) Caucasian 2) Negro 3) Oriental 4) Indian

5. Marital Status:

   1) Married 2) Single 3) Widowed 4) Divorced

6. Educational level of your parents as you were being reared:

1) both parents non-high school grads.	2) one parent was high school grad.	3) both parents high school grads.	4) 1 or both parents college graduate

7. Level of Educational Experience (Last degree you completed):

1) High School	2) B. A.	3) M. A.	4) Ph. D.

8. Your salary:

1) under 6,000	2) 6,000-7,000	3) 7,001-9,000	4) over 9,000

9. Years of Teaching Experience:

1) less than one	2) 1-5	3) 6-10	4) over 10

10. Experience in Present Building:

1) less than 4 months	2) 4 mos. to 1 yr.	3) 1-5 yrs.	4) over 5 yrs.

11. Total years of Teaching Experience in your present County system:

1) less than one	2) 1-5 yrs.	3) 6-10 yrs.	4) over 10 yrs.

12. Changed Buildings in February:

1) Yes	2) No

13. The school where I teach is located in which County:

1) Duval	2) Dade	3) Orange	4) Leon

14. The student body of the school where I teach is predominently:

1) Caucasian	2) Negro	3) Oriental	4) Indian

15. Present Job Satisfaction:

1) Very Dis-satisfied	2) Dissatisfied	3) Satisfied	4) Very Satisfied

1. Rarely Occurs
2. Sometimes Occurs
3. Often Occurs
4. Very frequently Occurs

16. Teachers' closest friends are other faculty members at this school. 1 2 3 4

17. The mannerisms of teachers at this school are annoying. 1 2 3 4

18. Teachers spend time after school with students who have individual problems. 1 2 3 4

19. Instructions for the operation of teaching aids are available. 1 2 3 4

20. Teachers invite other faculty to visit them at home. 1 2 3 4

21. There is a minority group of teachers who always oppose the majority. 1 2 3 4

22. Extra books are available for classroom use. 1 2 3 4

23. Sufficient time is given to prepare administrative reports. 1 2 3 4

24. Teachers know the family background of other faculty members. 1 2 3 4

25. Teachers exert group pressure on non-conforming faculty members. 1 2 3 4

26. In faculty meetings, there is a feeling of "let's get things done" 1 2 3 4

27. Administrative paper work is burdensome at this school. 1 2 3 4

28. Teachers talk about their personal life to other faculty members. 1 2 3 4

29. Teachers seek special favors from the principal. 1 2 3 4

30. School supplies are readily available for use in classroom. 1 2 3 4

1. Rarely Occurs
2. Sometimes Occurs
3. Often Occurs
4. Very frequently Occurs

31.	Student progress reports require too much work.	1 2 3 4
32.	Teachers have fun socializing together during school time.	1 2 3 4
33.	Teachers interrupt other faculty members who are talking in staff meetings.	1 2 3 4
34.	Most of the teachers here accept the faults of their colleagues.	1 2 3 4
35.	Teachers have too many committee requirements.	1 2 3 4
36.	There is considerable laughter when teachers gather informally.	1 2 3 4
37.	Teachers ask nonsensical questions in faculty meetings.	1 2 3 4
38.	Custodial service is available when needed.	1 2 3 4
39.	Routine duties interfere with the job of teaching.	1 2 3 4
40.	Teachers prepare administrative reports by themselves.	1 2 3 4
41.	Teachers ramble when they talk in faculty meetings.	1 2 3 4
42.	Teachers at this school show much school spirit.	1 2 3 4
43.	The principal goes out of his way to help teachers.	1 2 3 4
44.	The principal helps teachers solve personal problems.	1 2 3 4
45.	Teachers at this school stay by themselves.	1 2 3 4
46.	The teachers accomplish their work with great vim, vigor, and pleasure.	1 2 3 4
47.	The principal sets an example by working hard himself.	1 2 3 4
48.	The principal does personal favors for teachers.	1 2 3 4

1. Rarely Occurs
2. Sometimes Occurs
3. Often Occurs
4. Very frequently Occurs

49.	Teachers eat lunch by themselves in their own classrooms.	1 2 3 4
50.	The morale of the teachers is high.	1 2 3 4
51.	The principal uses constructive criticism.	1 2 3 4
52.	The principal stays after school to help teachers finish their work.	1 2 3 4
53.	Teachers socialize together in small select groups.	1 2 3 4
54.	The principal makes all class-scheduling decisions.	1 2 3 4
55.	Teachers are contacted by the principal each day.	1 2 3 4
56.	The principal is well prepared when he speaks at school functions.	1 2 3 4
57.	The principal helps staff members settle minor differences.	1 2 3 4
58.	The principal schedules the work for the teachers.	1 2 3 4
59.	Teachers leave the grounds during the school day.	1 2 3 4
60.	The principal criticizes a specific act rather than an individual.	1 2 3 4
61.	Teachers help select which courses will be taught.	1 2 3 4
62.	The principal corrects teachers' mistakes.	1 2 3 4
63.	The principal talks a great deal.	1 2 3 4
64.	The principal explains his reasons for criticism to teachers.	1 2 3 4
65.	The principal tries to get better salaries for teachers.	1 2 3 4
66.	Extra duty for teachers is posted conspicuously.	1 2 3 4

1. Rarely Occurs
2. Sometimes Occurs
3. Often Occurs
4. Very frequently Occurs

67.	The rules set by the principal are never questioned.	1 2 3 4
68.	The principal looks out for the personal welfare of teachers.	1 2 3 4
69.	School secretarial service is available for teachers' use.	1 2 3 4
70.	The principal runs the faculty meeting like a business conference.	1 2 3 4
71.	The principal is in the building before teachers arrive.	1 2 3 4
72.	Teachers work together preparing administrative reports.	1 2 3 4
73.	Faculty meetings are organized according to a tight agenda.	1 2 3 4
74.	Faculty meetings are mainly principal-report meetings.	1 2 3 4
75.	The principal tells teachers of new ideas he has run across.	1 2 3 4
76.	Teachers talk about leaving the school system.	1 2 3 4
77.	The principal checks the subject-matter ability of teachers.	1 2 3 4
78.	The principal is easy to understand.	1 2 3 4
79.	Teachers are informed of the results of a supervisor's visit.	1 2 3 4
80.	Grading practices are standardized at this school.	1 2 3 4
81.	The principal insures that teachers work to their full capacity.	1 2 3 4
82.	Teachers leave the building as soon as possible at day's end.	1 2 3 4
83.	The principal clarifies wrong ideas a teacher may have.	1 2 3 4
84.	Schedule changes are posted conspicuously at the school.	1 2 3 4